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Learning ◆ Knowledge ◆ Performance

M085/M086/M104
SERVICE MANUAL

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WARNING

The Service Manual contains information regarding service techniques, procedures, processes and spare parts of office equipment distributed by Ricoh Americas Corporation. Users of this manual should be either service trained or certified by successfully completing a Ricoh Technical Training Program.

Untrained and uncertified users utilizing information contained in this service manual to repair or modify Ricoh equipment risk personal injury, damage to property or loss of warranty protection.

Ricoh Americas Corporation

LEGEND

PRODUCT CODE	COMPANY		
	LANIER	RICOH	SAVIN
M085	SP 1200SF	SP 1200SF	SP 1200SF
M086	NA	NA	NA
M104	NA	NA	NA

DOCUMENTATION HISTORY

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*	06/2011	Original Printing

M085/M086

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READ THIS FIRST

Regulations

<For Europe and Other countries>

- Radio interference (220 to 240 volt model only)
  This machine follows EN55022 (CISPR Publication 22)/Class B.
- IEC 60825-1 specification (220 to 240 volt model only)
  This machine is a Class 1 laser product as defined in IEC 60825-1 specifications. The label shown below is attached in countries where it is needed.

  This machine has a Class 3B laser diode which produces invisible laser radiation in the laser unit. You should not open the laser unit under any circumstances.

  Caution

  Use of controls or adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

  For Finland and Sweden

  LUOKAN 1 LASERLAITE

  KLASS 1 LASER APPARAT

  Varoitus!

  Laitteen käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

  Varning

  Om apparaten används på annat sätt än i denna Bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.
- Internal laser radiation
  Maximum radiation power: 10 mW
  Wave length: 780 - 800 nm
  Laser class: Class 3B

- EU Directive 2002/96/EC and EN50419

  (European Union only)

  This equipment is marked with the recycling symbol below. It means that at the end of the life of the equipment you must dispose of it separately at an appropriate collection point and not place it in the normal domestic unsorted waste stream. This will benefit the environment for all. (European Union only)

<For USA and Canada>

- Federal Communications Commission (FCC) Declaration of Conformity

  (For USA)

  Responsible Party:

  Ricoh Americas Corporation

  5 Dedrick Place, West Caldwell, NJ 07006 USA

  Telephone: 973-882-2000

  declares, that the products

  Product name: Laser Multi Function

  Model number: SP 1200SF

  complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

  This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the end user is encouraged to try to correct the interference by one or more of the following

measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Important

- A shielded interface cable should be used to ensure compliance with the limits for a Class B digital device. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

- Industry Canada Compliance Statement (For Canada)

  This Class B digital apparatus complies with Canadian ICES-003.

  Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

- Laser Safety (110 to 120 volt model only)

  This machine is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the machine does not produce hazardous laser radiation.

  Since radiation emitted inside the machine is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

- FDA Regulations (110 to 120 volt model only)

  The U.S. Food and Drug Administration (FDA) has implemented regulations for laser products manufactured on and after August 2, 1976. Compliance is mandatory for products marketed in the United States. The following label on the back of the machine indicates compliance with the FDA regulations and must be attached to laser products marketed in the United States.

MANUFACTURED: RICOH COMPANY LTD, 3-6, Naka-magome 1-Chome Ohta-ku, Tokyo 143-8555, Japan Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.

- Internal laser radiation
  Maximum radiation power: 10 mW
  Wave length: 780 - 800 nm
  Laser class: Class 3B

Safety Information

- Caution for Laser Product (WARNHINWEIS fur Laser drucker)
  CAUTION:
  When servicing the machine and it is operated with the cover open, the regulations of VBG 93 and the performance instructions for VBG 93 are valid.
  CAUTION:
  In case of any trouble with the laser unit, replace the laser unit itself. To prevent direct exposure to the laser beam, do not try to open the enclosure of the laser unit.
  ACHTUNG:
  Im Falle von Störungen der Lasereinheit muß diese ersetzt werden. Das Gehäuse der Lasereinheit darf nicht geöffnet werden, da sonst Laserstrahlen austreten können.
- Additional Information
  When servicing the optical system of the machine, be careful not to place a screwdriver or other reflective object in the path of the laser beam. Be sure to take off any personal accessories such as watches and rings before working on the machine. A reflected beam, though invisible, can permanently damage the eyes.
  Since the beam is invisible, the following caution label is attached on the laser unit.

DANGER
INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK DEFEATED. AVOID DIRECT EXPOSURE TO BEAM. CLASS 3B LASER PRODUCT.
GEFAHR
UNSICHTBARE LASERSTRAHLUNG, WENN GEÖFFNET UND VERRIEGELUNG GELÖST. DIREKTEN KONTAKT MIT DEM LASERSTRAHL VERMEIDEN. LASERGERÄT KLASSE 3B.
DANGER
RAYONNEMENT LASER INVISIBLE LORSQUE L'APPAREIL EST OUVERT OU ENDOMMAGE. EVITER TOUTES EXPOSITIONS DIRECTES AU FAISCEAU. PRODUIT LASER DE CLASSE 3B.
VARNING
OSYNLIG LASERSTRÅLNING NÄR DEN HÄR DELEN ÄR ÖPPNAD OCH SPÄRRAR ÄR URKOPPLADE. UNDVIK DIREKT EXPONERING AV STRÅLAR. KLASS 3B LASERAPPARAT.
FARE
USYNLIG LASERSTRÅLE NÅR MASKINEN ER ÅPEN OG DEKSELBRYTERE AKTIVERT, UNNGÅ DIREKTE EKSPONERING AV LASERSTRÅLEN. KLASSE 3B LASER PRODUKT.
ATTENTIE
ONZICHTBARE LASER STRALING BIJ OPENING EN OMZEILDE BEVEILIGING.VOORKOM DIRECTE BLOOTSTELLING AAN STRAAL. KLASSE 3B LASER PRODUCT.
FARE
USYNLIGE LASERSTRÅLER, HVIS DU ÅBNER OG SAMTIDIGT BLOKERER LÅSEN. UNDGÅ LASERSTRÅLERNE. KLASSE 3B LASERPRODUKT.
¡PELIGRO!
EMISIÓN DE RADIACIÓN LÁSER INVISIBLE CUANDO SE ENCUENTRA ABIERTO Y DESBLOQUEADO. EVITE LA EXPOSICIÓN DIRECTA AL HAZ. PRODUCTO LÁSER DE CATEGORÍA 3B.
VAROITUS
LAITETTA AVATTAESSA JA SUOJALUKITUSTA OHITTAESSA LAITTEESTA LÄHTEE NÄKYMÄTÖNTÄ LASERSÄTEILYÄ. VARO ALTISTUMASTA SUORAAN SÄTEELLE. LUOKAN 3 LASERLAITE.

- Definitions of Warnings, Cautions, and Notes

  The following conventions are used in this manual:

  ⚠WARNING

  Warnings tell you what to do to prevent possible personal injury.

  ⚠CAUTION

  Cautions specify procedures you must follow or avoid to prevent possible damage to the machine or other objects.

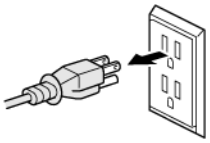
  Note

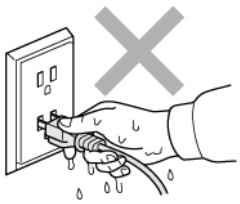
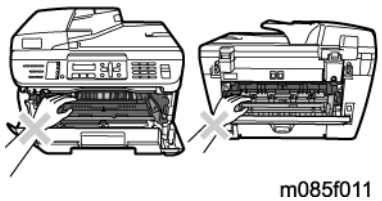
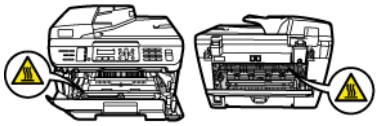
  Notes tell you useful tips when servicing the machine and bits of knowledge to help understand the machine.

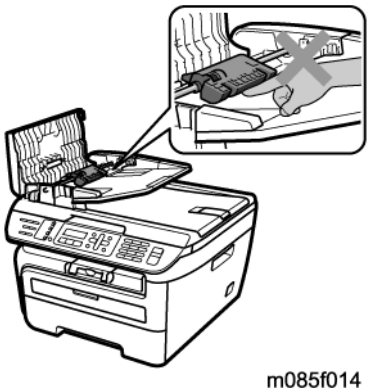
Mark	Contents
⚠	Electrical Hazard icons alert you to a possible electrical shock.
⚠	Hot Surface icons warn you not to touch machine parts that are hot.

- Safety Precautions

  Please keep these instructions for later reference and read them before attempting any maintenance.

⚠WARNING	
⚠ There are high voltage electrodes inside the machine. Before you clean the inside of the machine, make sure you have unplugged the telephone line cord first and then the power cord from the AC power outlet. (Refer to the User's Guide.)	 m085f008
⚠ DO NOT use flammable substances such as alcohol, benzine, thinner or any type of spray to clean the inside or outside of the machine. Doing this may cause a fire or electrical shock. Refer to the User's Guide for how to clean the machine.	

⚠WARNING	
DO NOT handle the plug with wet hands. Doing this might cause an electrical shock.	 m085f010
Always make sure the plug is fully inserted. After you have just used the machine, some internal parts of the machine will be extremely hot. When you open the front or back cover of the machine, DO NOT touch the shaded parts shown in the illustration.	 m085f011
The fuser unit is marked with a caution label. Please DO NOT remove or damage the label.	 m085f012
To prevent injuries, be careful not to put your hands on the edge of the machine under the document cover or scanner cover.	 m085f013

⚠WARNING	
⚠ To prevent injuries, be careful not to put your fingers in the area shown in the illustration.	 m085f014
⚠ DO NOT use a vacuum cleaner to clean up scattered toner. Doing this might cause the toner dust to ignite inside the vacuum cleaner, potentially starting a fire. Please carefully clean the toner dust with a dry, lint-free cloth and dispose of it according to local regulations.	
⚠ When you move the machine, grasp the side hand holds that are under the scanner.	
⚠ Use caution when installing or modifying telephone lines. Never touch telephone wires or terminals that are not insulated unless the telephone line has been unplugged at the wall jack. Never install telephone wiring during a lightning storm. Never install a telephone wall jack in a wet location.	
⚠ This product must be installed near an AC power outlet that is easily accessible. In case of an emergency, you must disconnect the power cord from the AC power outlet to shut off the power completely.	
⚠ To reduce the risk of shock or fire, use only a No. 26 AWG or larger telecommunication line cord.	

⚠CAUTION

Lightning and power surges can damage this product! We recommend that you use a quality surge protection device on the AC power line and on the telephone line, or unplug the cords during a lightning storm.

⚠WARNING

IMPORTANT SAFETY INSTRUCTIONS

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to people, including the following:

1. DO NOT use this product near water, for example, near a bath tub, wash bowl, kitchen sink, washing machine, or in a wet basement or near a swimming pool.
2. Avoid using this product during an electrical storm. There may be a remote risk of electric shock from lightning.
3. DO NOT use this product to report a gas leak in the vicinity of the leak.
4. Use only the power cord provided with the machine.
5. DO NOT dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.

SAVE THESE INSTRUCTIONS

Acronyms and Technical Terms

In this manual, the manual specific acronyms and technical terms are used in addition to the generally used ones. The table below contains typical acronyms and technical terms that are used throughout these manuals.

APIPA	Automatic Private IP Addressing
ASIC	Application Specific Integrated Circuit
ASSY	Assembly
CN	Connector
CPU	Central Processing Unit
dB	decibel
DEV	Development
DIMM	Dual Inline Memory Module
dpi	dots per inch
EEPROM	Electronically Erasable and Programmable Read Only Memory
FR	Feed Roller
FU	Fuser
HEX	Hexadecimal
HV	High Voltage
HVPS	High Voltage Power Supply
IEEE 1284	Institute of Electrical and Electronic Engineers 1284
IF	Interface
IPv4	Internet Protocol Version 4
IPv6	Internet Protocol Version 6
LCD	Liquid Crystal Display

LD	Laser Diode
LED	Light Emitting Diode
LV	Low Voltage
LVPS	Low Voltage Power Supply
N/A	Not Applicable
NC*	Network Circuit
NVRAM	Nonvolatile Random Access Memory
PF	Paper Feed
PP gear	Pressure Plate gear
ppm	pages per minute
PU	Pick-Up roller
RAM	Random Access Memory
REGI	Registration
SOL	Solenoid
SP	Spare Parts
TE	Toner Empty
TN	Toner
TR	Transfer

* Excluding the acronym shown on the wiring diagram or circuit diagram.

PRODUCT INFORMATION

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

1. PRODUCT INFORMATION

1.1 SPECIFICATIONS

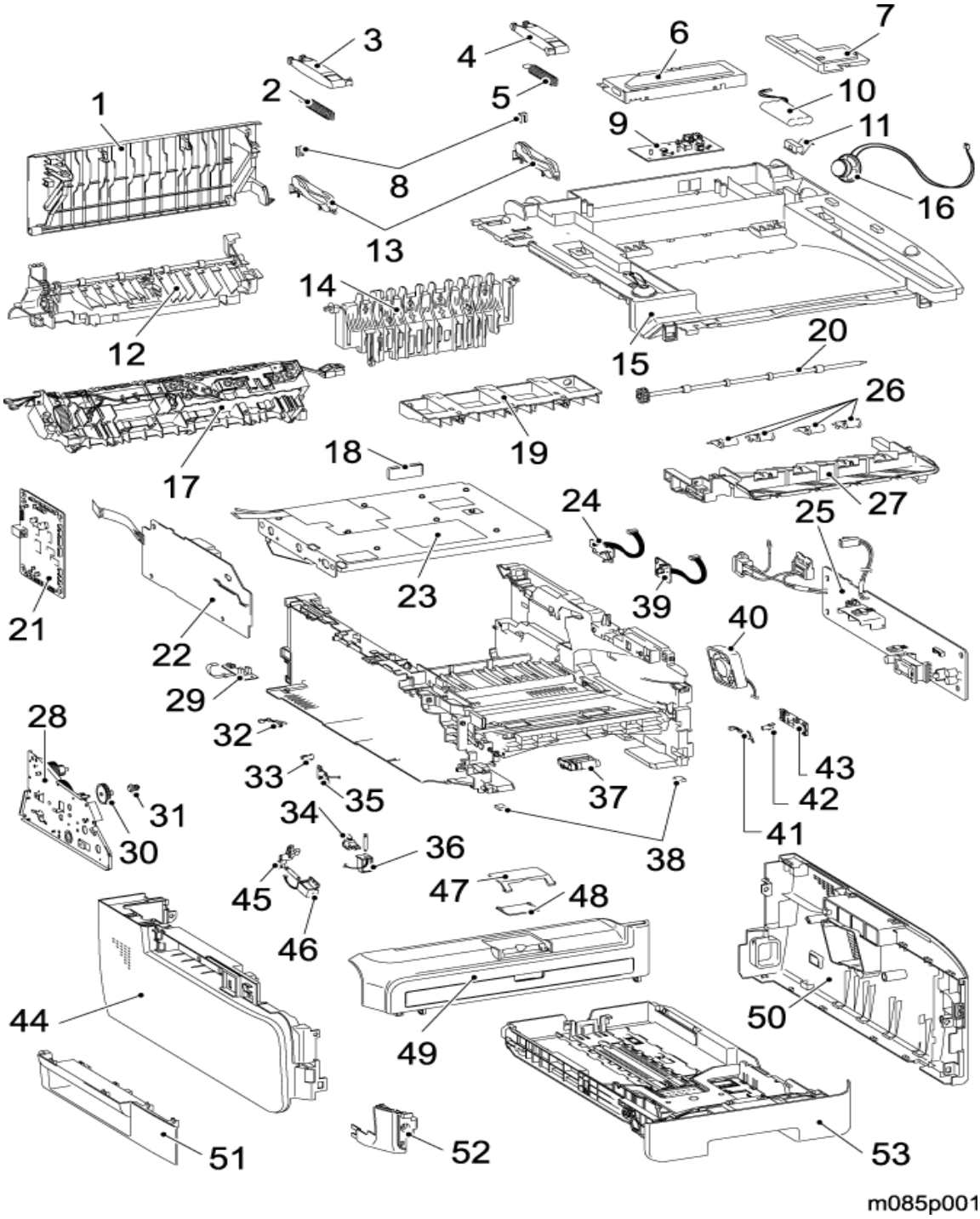
See "Appendices" for the following information:

- Specifications List

1.2 OVERVIEW

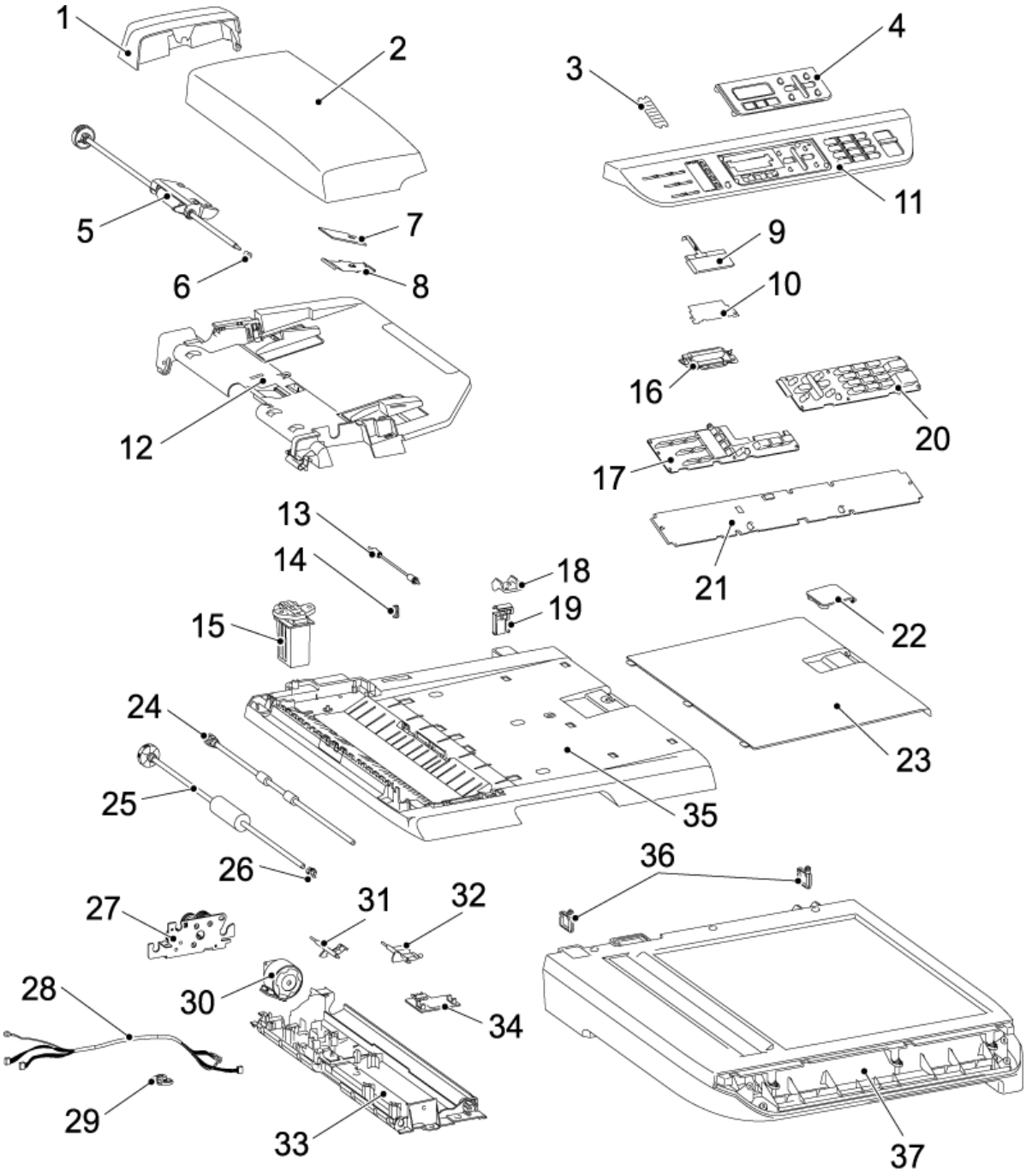
1.2.1 PART NAMES

Printer part



1. Back cover	28. Drive sub ASSY
2. Pull arm spring ADF R	29. Eject sensor PCB ASSY
3. Pull arm R	30. DEV gear joint/53R
4. Pull arm L	31. DEV joint
5. Pull arm spring ADF	32. New toner sensor harness ASSY
6. NCU shield	33. PT sensor holder
7. Speaker cover	34. T1 solenoid lever
8. Lock claw	35. Toner sensor PCB unit ASSY
9. NCU PCB	36. T1 solenoid
10. Battery ASSY	37. Roller holder ASSY
11. Speaker hold spring	38. Rubber foot
12. Fuser cover	39. Registration front sensor PCB ASSY
13. Pull arm guide	40. Fan motor 60 unit
14. Outer chute ASSY	41. Cover sensor harness ASSY
15. Joint cover ASSY	42. LED holder
16. Speaker unit	43. Toner LED PCB ASSY
17. Fuser unit	44. Side cover L ASSY
18. Filter ASSY	45. Registration solenoid lever
19. Joint cover sub chute ASSY	46. Registration solenoid
20. Eject roller ASSY 2	47. Paper stopper L
21. Main PCB ASSY	48. Paper stopper S
22. High-voltage PS PCB ASSY	49. Front cover ASSY
23. Laser unit	50. Side cover R ASSY
24. Registration rear sensor PCB ASSY	51. Side cover sub L
25. PS PCB unit ASSY	52. Corner cover
26. Pinch roller ASSY	53. Paper tray ASSY
27. Inner chute ASSY	

ADF / FB part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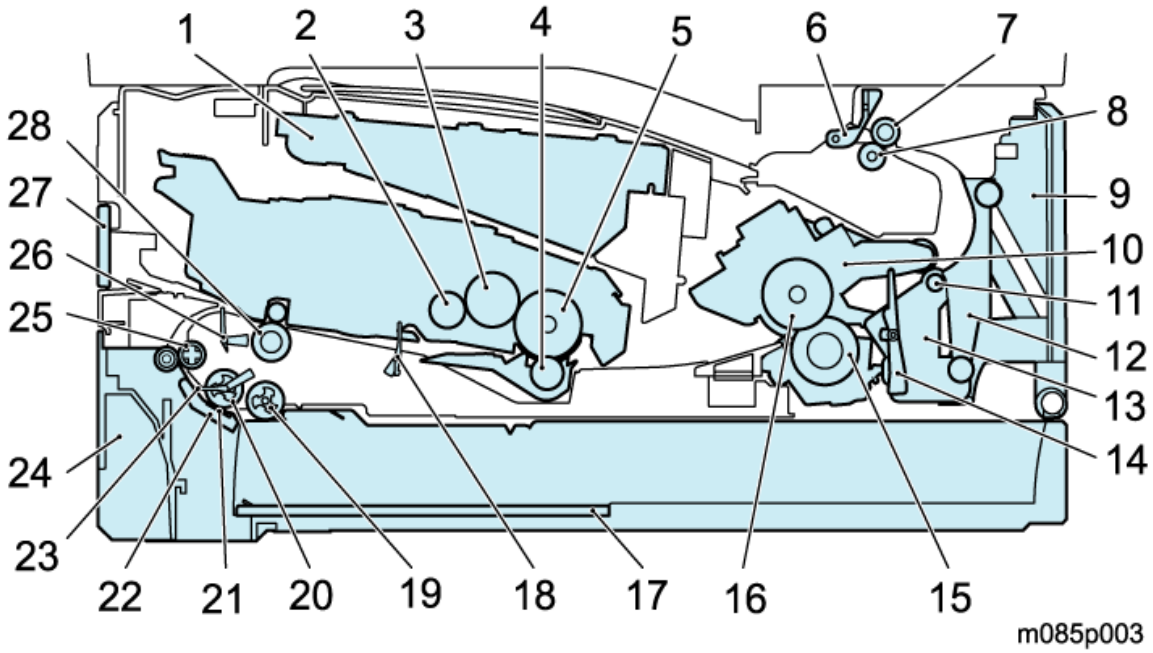
m085p002

1. Gear cover	20. Rubber key R
2. ADF cover	21. Panel PCB ASSY
3. Address label	22. Document stopper
4. Panel dress cover	23. Document dress cover
5. Separate roller shaft ASSY	24. Ejection roller ASSY
6. Separate roller bushing	25. LF roller ASSY
7. Separation rubber	26. LF roller bushing
8. ADF plate spring	27. Drive frame ASSY
9. LCD	28. ADF harness unit
10. Diffusion film	29. harness holder
11. Panel unit	30. ADF motor
12. Upper document chute ASSY	31. Actuator L
13. Pressure roller ASSY	32. Actuator R
14. Pressure roller spring	33. Lower document chute ASSY
15. Hinge ASSY L	34. ADF sensor PCB ASSY
16. Back light guide	35. Document cover sub ASSY
17. Rubber key L	36. Cord hook
18. Hinge R	37. Document scanner unit
19. Hinge arm	

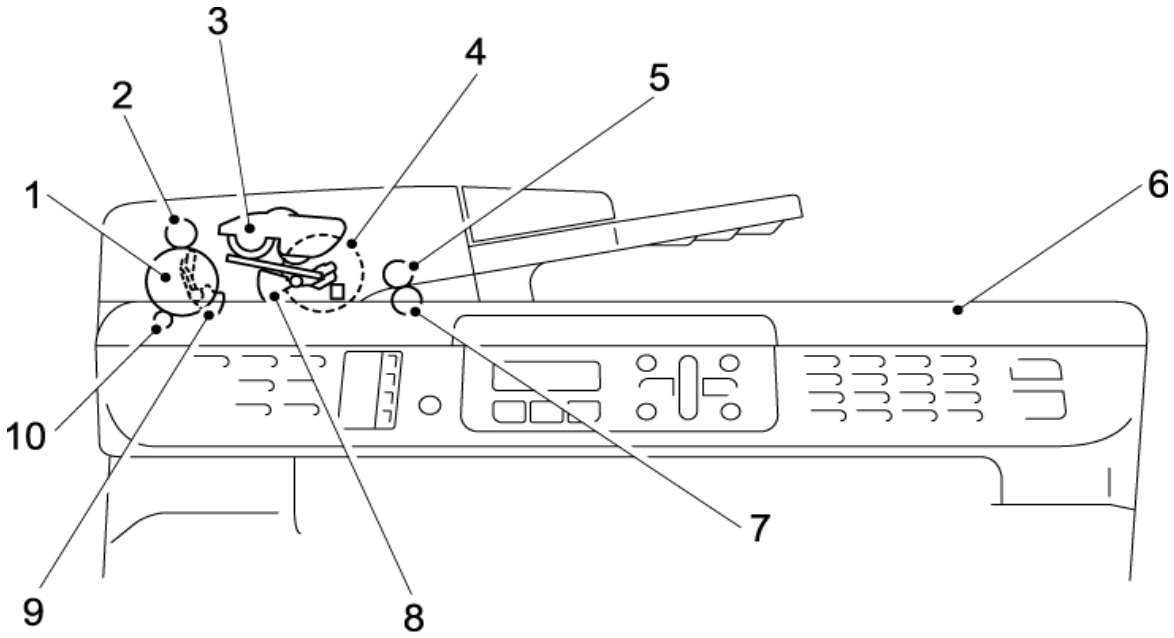
1.2.2 CROSS-SECTION DRAWING

Printer part



1. Laser unit	15. Pressure roller
2. Supply roller	16. Heat roller
3. Develop roller	17. Plate
4. Transfer roller	18. Registration rear actuator
5. Exposure drum	19. Paper feed roller
6. Paper stack lever	20. Separation roller
7. Eject roller 2	21. Separation pad
8. Pinch roller	22. Separation pad ASSY
9. Back cover	23. Edge actuator
10. Fuser unit	24. Paper tray
11. Eject roller 1	25. Front feed roller
12. Outer chute	26. Registration front actuator
13. Fuser cover	27. Manual feed slot cover
14. Eject actuator	28. Registration roller

ADF part



m085p004

1. LF roller	6. Document cover
2. Pressure roller	7. Pressure roller
3. Separation roller shaft ASSY	8. Document front actuator
4. ADF motor	9. Document rear actuator
5. Ejection roller	10. Pressure roller

INSTALLATION

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

2. INSTALLATION

2.1 INSTALLATION REQUIREMENTS

2.1.1 OPERATING ENVIRONMENT

1. Put your machine on a flat, stable surface such as a desk that is free of vibration and shocks.
2. Use the machine in a well-ventilated room; use the machine within the following ranges of temperature and humidity: temperature between 10°C and 32.5°C (50°F to 90.5°F), and the relative humidity is maintained between 20% and 80%.
3. The machine is not exposed to direct sunlight, excessive heat, moisture, or dust.
4. Condensation

   When the machine is moved from a cold place into a warm room, condensation may occur inside the machine, causing various problems as listed below.

   - Condensation on the optical surfaces such as the scanner window, lenses, the reflection mirror and the protection glass may cause the print image to be light.
   - If the exposure drum is cold, the electrical resistance of the photosensitive layer is increased, making it impossible to obtain the correct contrast when printing.
   - Condensation on the charge unit may cause corona charge leakage.
   - Condensation on the plate and separation pad may cause paper feed failures.

   If condensation has occurred, leave the machine for at least 2 hours to allow it to reach room temperature.

   If the drum unit is unpacked soon after it is moved from a cold place to a warm room, condensation may occur inside the unit which may cause incorrect images. Instruct the end user to allow the unit to come to room temperature before unpacking it. This will take one or two hours.

2.1.2 POWER SUPPLY

1. The AC input power supply described on the rating plate of the machine should be within ±10% of the rated voltage.
2. The AC input power supply is within the regulated value.
3. The cables and harnesses are connected correctly.
4. The fuses are not blown.

PREVENTIVE MAINTENANCE

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

3. PREVENTIVE MAINTENANCE

3.1 PERIODICAL REPLACEMENT PARTS

There are no parts to be replaced periodically.

REPLACEMENT AND ADJUSTMENT

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
127 ~ 132	11/30/2011	Firmware Installation

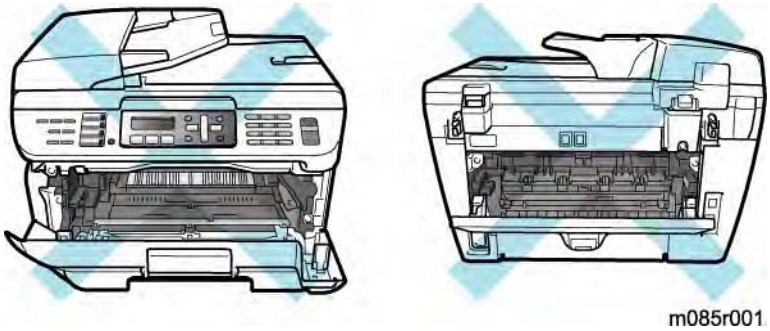
4. REPLACEMENT AND ADJUSTMENT

4.1 SAFETY PRECAUTIONS

To avoid creating secondary problems by mishandling, follow the warnings and precautions below during maintenance work.

⚠WARNING

- Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the machine.
- When opening the front cover or back cover to access any parts inside the machine, never touch the shaded parts shown in the following figures.
- DO NOT use flammable substances such as alcohol, benzine, thinner or any type of spray to clean the inside or outside of the machine. Doing this may cause a fire or electrical shock.



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- Be careful not to lose screws, washers, or other parts removed.
- Be sure to apply grease to the gears and applicable positions specified in this chapter.
- When using soldering irons or other heat-generating tools, take care not to accidentally damage parts such as wires, PCBs and covers.
- Static electricity charged in your body may damage electronic parts, When transporting PCBs, be sure to wrap them in conductive sheets.
- When replacing the PCB and all the other related parts, put on a grounding wrist band and perform the job on a static mat. Also take care not to touch the conductor sections on the flat cables or on the wire harness.

- When connecting or disconnecting cable connectors, hold the connector body, not the cables. If the connector has a lock, release the connector lock first to release it.
- After a repair, check not only the repaired portion but also all connectors. Also check that other related portions are functioning properly before operational checks.
- After disconnecting flat cables, check that each cable is not damaged at its end or short-circuited.
- When connecting flat cables, do not insert them at an angle. After insertion, check that the cables are not at an angle.

4.2 SCREW TORQUE LIST

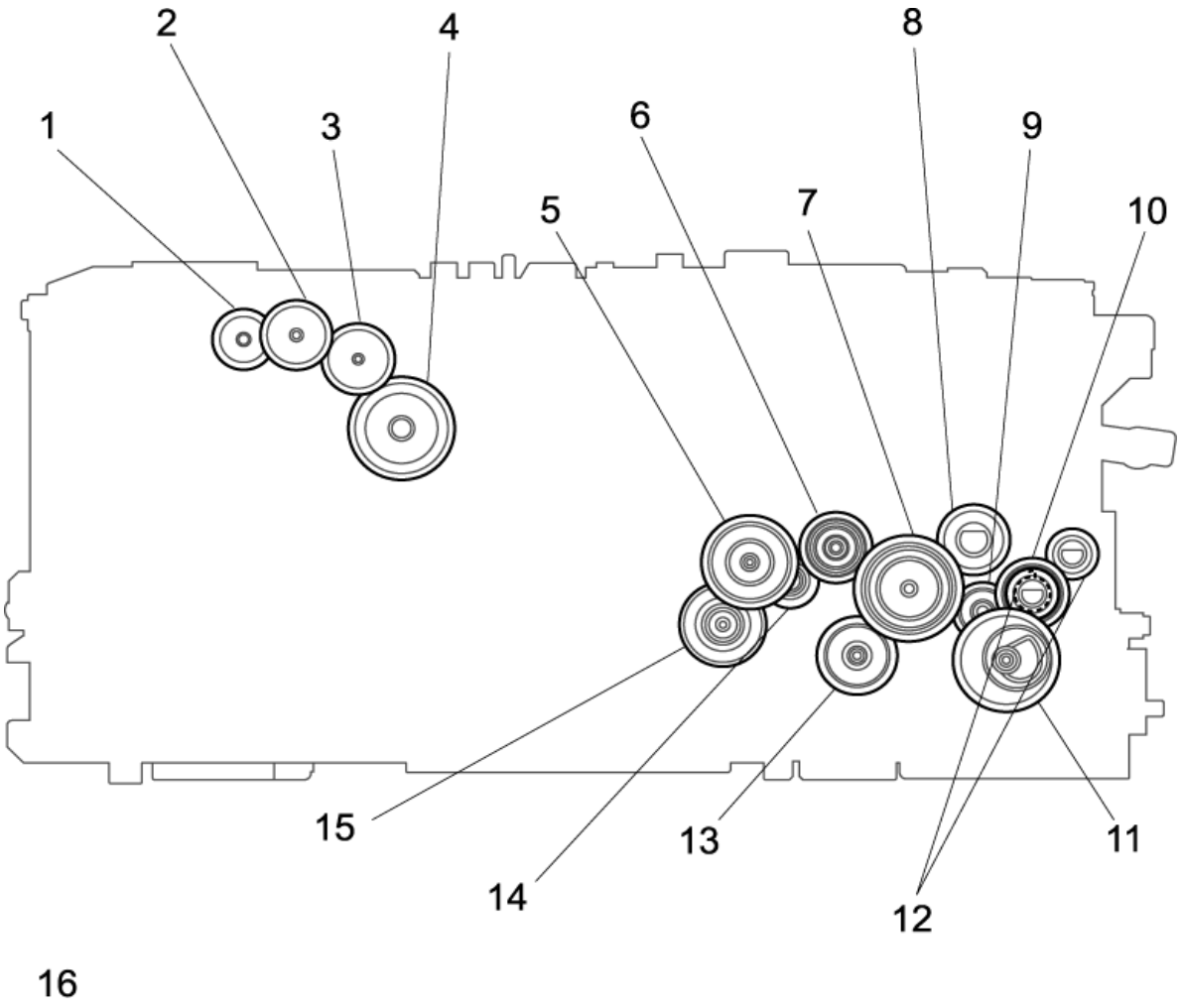
Location of screw	Screw type	Q'ty	Tightening torque Nm (kgf·cm)
JOINT COVER SUB CHUTE ASSY	Taptite bind B M4x12	2	0.8±0.1 (8±1)
INNER CHUTE ASSY	Taptite bind B M4x12	2	0.6±0.1 (6±1)
FUSER UNIT	Taptite pan B M4x14	2	0.8±0.1 (8±1)
CONER COVER / SIDE COVER L ASSY	Taptite bind B M4x12	3	0.8±0.1 (8±1)
SIDE COVER SUB L	Taptite bind B M4x12	1	0.8±0.1 (8±1)
MAIN SHIELD COVER PLATE	Taptite cup S M3x6 SR	1	0.9±0.05 (9±0.5)
MAIN SHIELD COVER PLATE (FG are tightened together)	Taptite cup S M3x6 SR	2	0.55±0.05 (5.5±0.5)
ADF UNIT	Taptite bind B M4x12	1	0.8±0.1 (8±1)
HINGE ARM	Taptite bind B M4x12	1	0.8±0.1 (8±1)
HINGE ASSY L	Taptite cup S M3x12	1	0.8±0.1 (8±1)
	Taptite cup B M3x10	2	0.5±0.1 (5±1)
UPPER DOCUMENT CHUTE ASSY	Taptite cup B M3x10	4	0.5±0.1 (5±1)
LOWER DOCUMENT CHUTE ASSY	Taptite cup B M3x10	2	0.5±0.1 (5±1)
DRIVE FRAME ASSY	Taptite cup B M3x10	2	0.5±0.1 (5±1)

ADF harness unit (FG)	Taptite cup S M3x6 SR	1	0.8±0.1 (8±1)
ADF MOTOR	Taptite bind B M3x6	1	0.8±0.1 (8±1)
DOCUMENT DRESS COVER	Taptite cup B M3x8	1	0.5±0.1 (5±1)
CORD HOOK	Taptite cup B M3x8	2	0.5±0.1 (5±1)
PANEL UNIT	Taptite cup B M3x10	4	0.5±0.1 (5±1)
PRINTED PANEL COVER	Taptite cup B M3x8	4	0.4±0.1 (4±1)
NCU SHIELD	Taptite bind B M4x12	2	0.8±0.1 (8±1)
	Screw pan (S/P washer) M3.5x6	1	0.5±0.05 (5±0.5)
NCU PCB	Taptite cup S M3x6 SR	2	0.5±0.1 (5±1)
SPEARKER COVER	Taptite bind B M4x12	1	0.8±0.1 (8±1)
SIDE COVER R ASSY	Taptite bind B M4x12	2	0.8±0.1 (8±1)
MAIN PCB ASSY	Taptite cup S M3x6 SR	4	0.6±0.1 (6±1)
JOINT COVER ASSY	Taptite bind B M4x12	5	0.8±0.1 (8±1)
HIGH-VOLTAGE PS PCB ASSY	Taptite cup S M3x6 SR	2	0.8±0.05 (8±0.5)
	Taptite bind B M4x12	2	0.8±0.05 (8±0.5)

LASER UNIT (Left side of Main frame and back of the right side.)	Taptite cup S M3x6 SR	3	0.8±0.05 (8±0.5)
LASER UNIT (Front of the right side of Main frame.)	Taptite pan (S/P washer) S M3x8	1	0.8±0.05 (8±0.5)
AIR DUCT	Taptite cup S M3x6 SR	2	0.8±0.05 (8±0.5)
LV SHIELD PLATE COVER	Screw pan (S/P washer) M3.5x6	1	0.5±0.05 (5±0.5)
	Taptite cup S M3x6 SR	2	0.5±0.05 (5±0.5)
SW HOLDER	Taptite bind B M4x12	1	0.8±0.1 (8±1)
INLET HARNESS ASSY	Screw pan (S/P washer) M3.5x6	1	0.5±0.05 (5±0.5)
	Taptite flat B M3x10	2	0.45±0.05 (4.5±0.5)
LVPS PCB UNIT	Taptite cup S M3x6 SR	2	0.5±0.05 (5±0.5)
LV SHIELD PLATE 2	Taptite bind B M4x12	2	0.8±0.1 (8±1)
LV SHIELD PLATE 2 (Back Side)	Taptite cup S M3x6 SR	1	0.6±0.1 (6±1)
LV SHIELD PLATE 2 (Front chute ground plate side)	Taptite cup S M3x6 SR	1	0.5±0.05 (5±0.5)
ACTUATOR HOLDER ASSY	Taptite bind B M3x10	2	0.5±0.1 (5±1)

REGISTRATION FRONT SENSOR PCB ASSY	Taptite bind B M3x10	1	0.5±0.1 (5±1)
REAR ACTUATOR HOLDER ASSY	Taptite bind B M3x10	2	0.5±0.1 (5±1)
REGISTRATION REAR SENSOR PCB ASSY	Taptite bind B M3x10	1	0.5±0.1 (5±1)
UNDER FG WIRE	Taptite bind B M4x12	1	0.8±0.1 (8±1)
	Taptite cup S M3x6 SR	1	0.8±0.05 (8±0.5)
DRIVE SUB ASSY	Taptite cup S M3x6 SR	1	0.6±0.1 (6±1)
	Taptite bind B M4x12	9	0.8±0.1 (8±1)
TONER SENSOR HARNESS ASSY	Taptite bind B M3x10	1	0.5±0.1 (5±1)
REGISTRATION SOLENOID	Taptite bind B M3x10	1	0.5±0.1 (5±1)
T1 SOLENOID	Taptite bind B M3x10	1	0.5±0.1 (5±1)
FU FRONT PAPER GUIDE	Taptite bind B M3x10	3	0.5±0.1 (5±1)
CHUTE GROUND PLATE	Taptite cup S M3x6 SR	2	0.6±0.1 (6±1)
MAIN SHIELD PLATE	Taptite bind B M4x12	3	0.8±0.1 (8±1)
MAIN FRAME L ASSY	Taptite bind B M4x12	4	0.8±0.1 (8±1)
	Taptite cup S M3x6 SR	2	0.7±0.1 (7±1)

4.3 OVERVIEW OF GEARS



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1. EJECTOR GEAR 17 (LU2016001)	9. FEEDER GEAR 17/22 (LU2043001)
2. EJECTOR GEAR 15/25 (LU2018001)	10. FEEDER GEAR 26/20 (LU2042001)
3. EJECTOR GEAR 26 (LU2017001)	11. T1 GEAR 38/31 SECTOR (LU2044001)
4. FUSER GEAR 22/37 (LU2015001)	12. FEEDER GEAR 17 TERMINAL (LU2129001)
5. DEV GEAR 17/33L (LU2054001)	13. P/P GEAR 29 SECTOR (LU2045001)

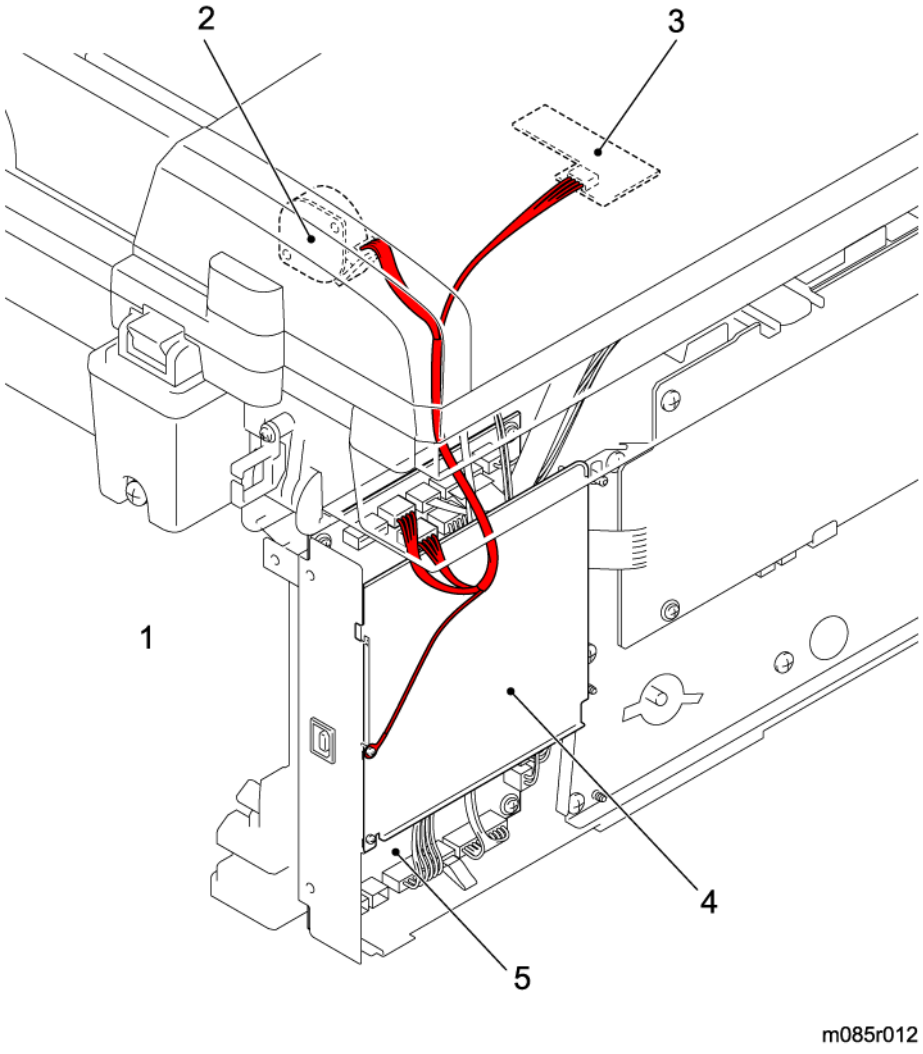
6. REGISTRATION GEAR 27 PENDULUM (LU2048001)	14. REGISTRATION GEAR 19 (LU2047001)
7. REGISTRATION DIFFERENTIAL GEAR ASSY (LU2049001)	15. DEV GEAR 17/18R/47R (LU2053001)
8. REGISTRATION GEAR 25 TERMINAL (LU2128001)	16. ( ) is part code.

⚠CAUTION

- The part codes of gears are subject to change without notice.

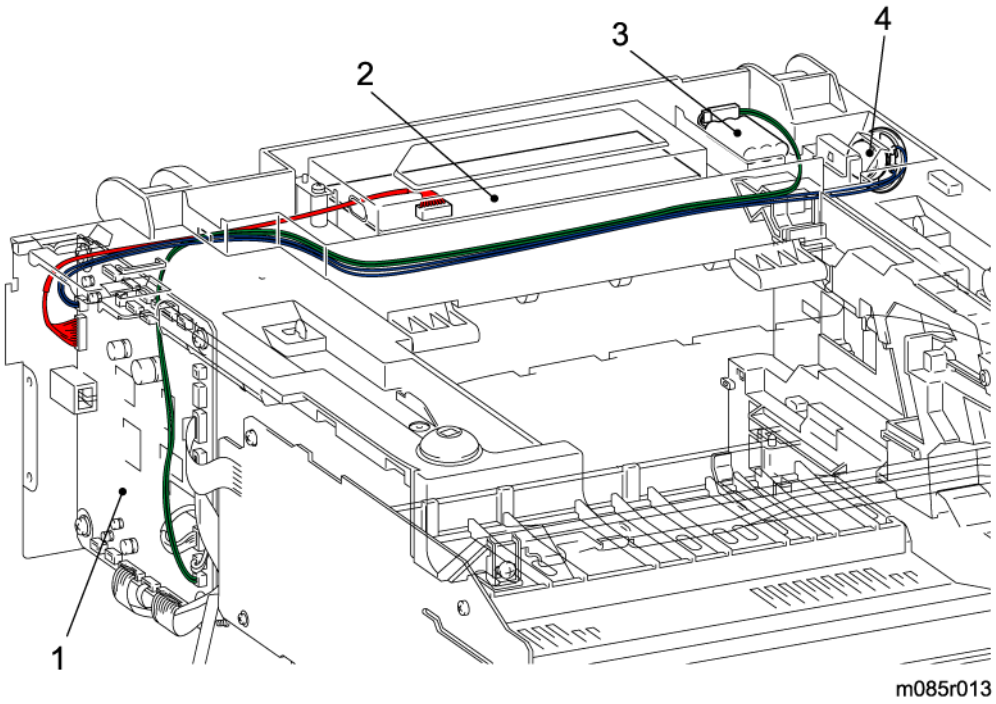
4.4 HARNESS ROUTING

4.4.1 ADF MOTOR, ADF SENSOR PCB ASSY TO MAIN PCB ASSY



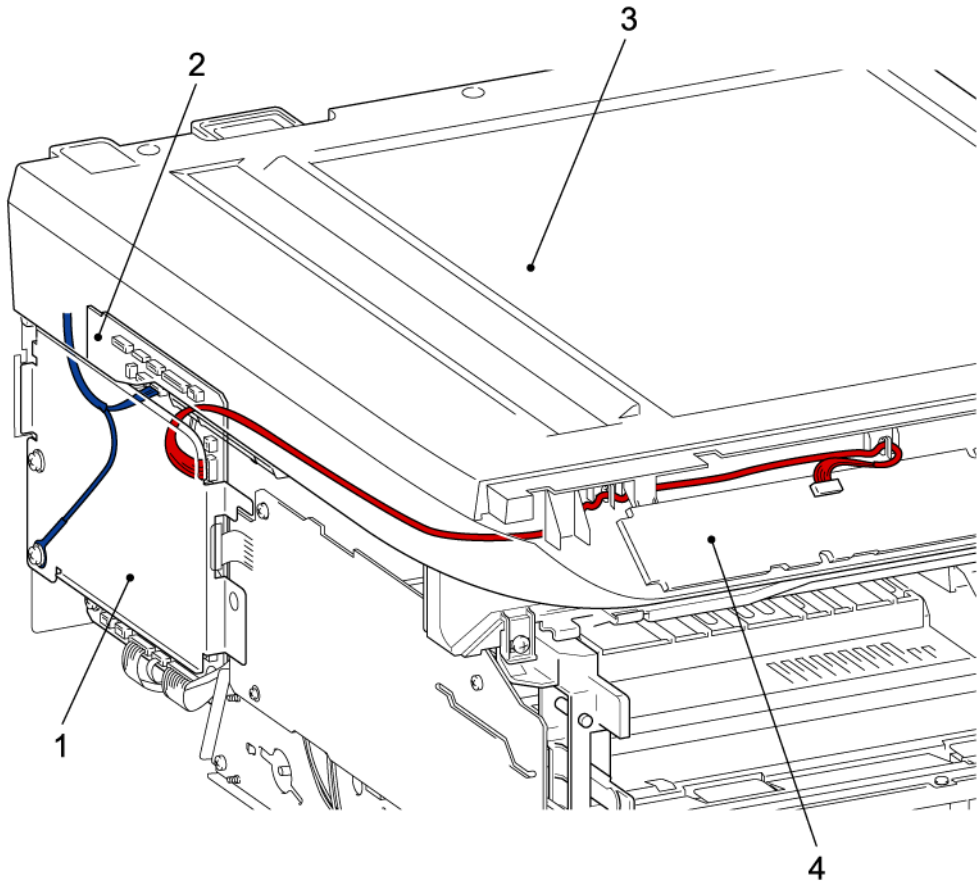
1. <Back Side>	4. Main PCB Shield plate
2. ADF motor	5. Main PCB ASSY
3. ADF sensor PCB ASSY	

4.4.2 NCU PCB, BATTERY ASSY, SPEAKER UNIT ASSY TO MAIN PCB ASSY



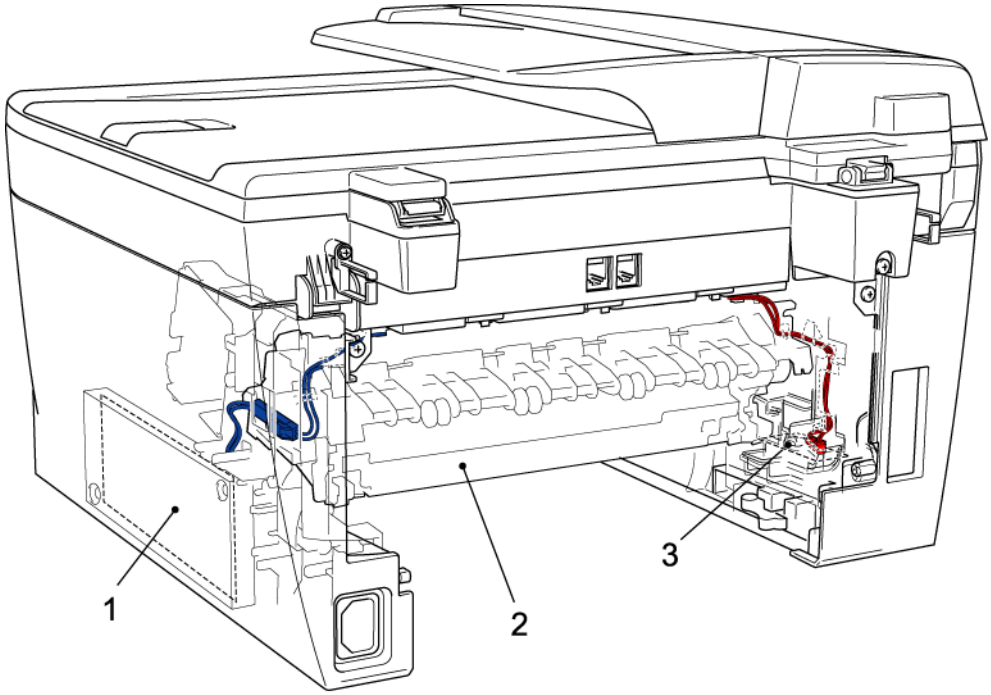
1. Main PCB ASSY	3. Battery ASSY
2. NCU PCB	4. Speaker unit ASSY plate

4.4.3 DOCUMENT SCANNER UNIT, PANEL PCB ASSY



1. Main shield cover plate	3. Document scanner unit
2. Main PCB ASSY	4. Panel PCB ASSY

4.4.4 FUSER UNIT



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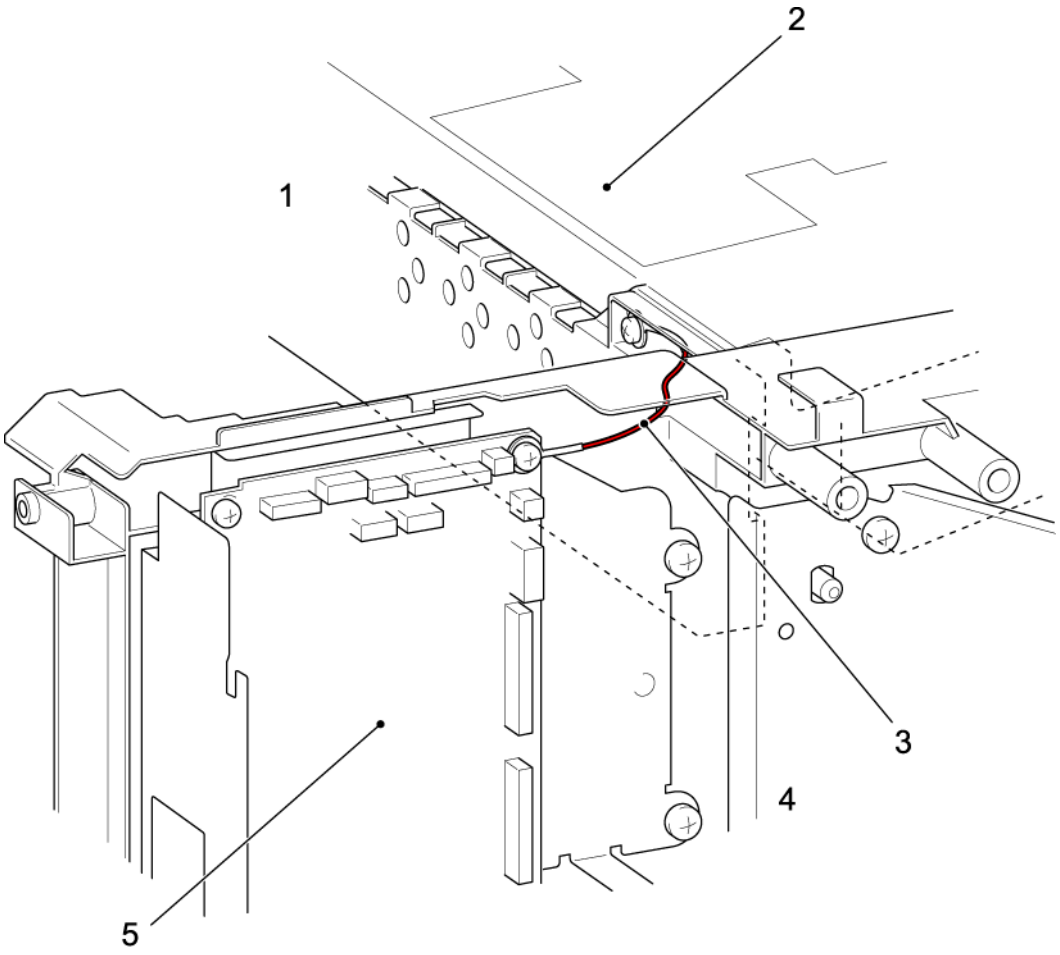
1. PS PCB unit	3. Eject sensor PCB ASSY
2. Fuser unit	

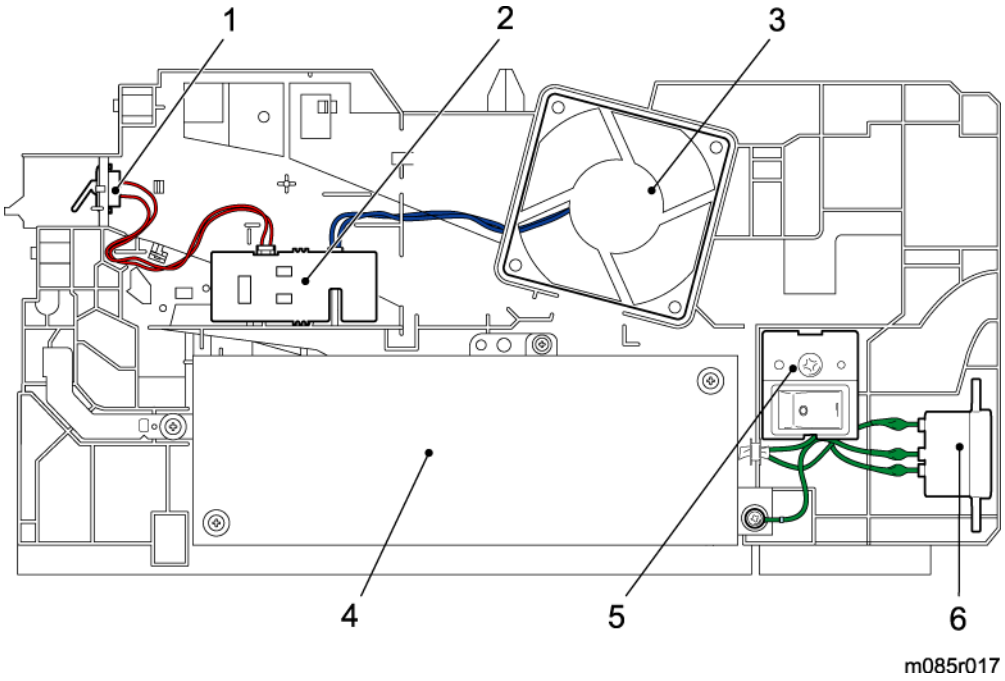
4.4.5 FG HARNESS



m085r016

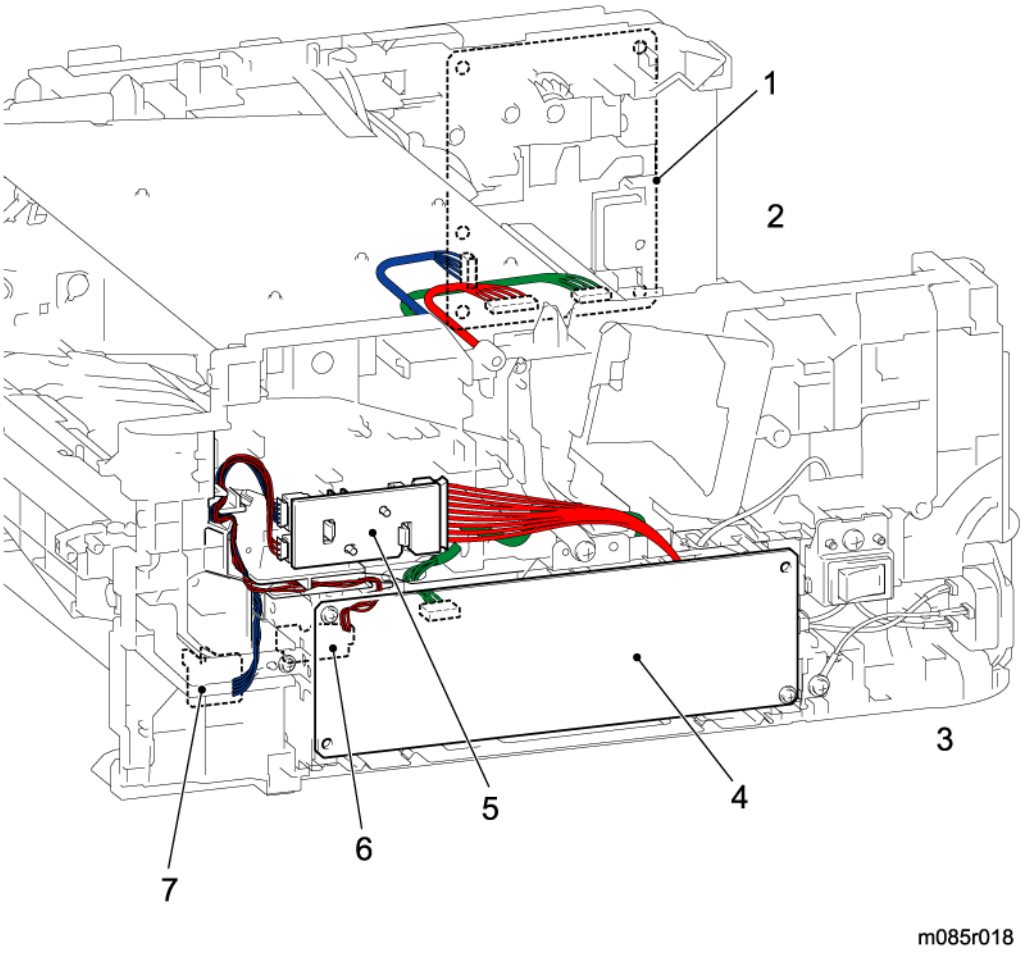
1. <Back side>	4. <Left side>
2. Laser unit	5. Main PCB ASSY
3. FG harness	

4.4.6 MAIN FRAME R ASSY



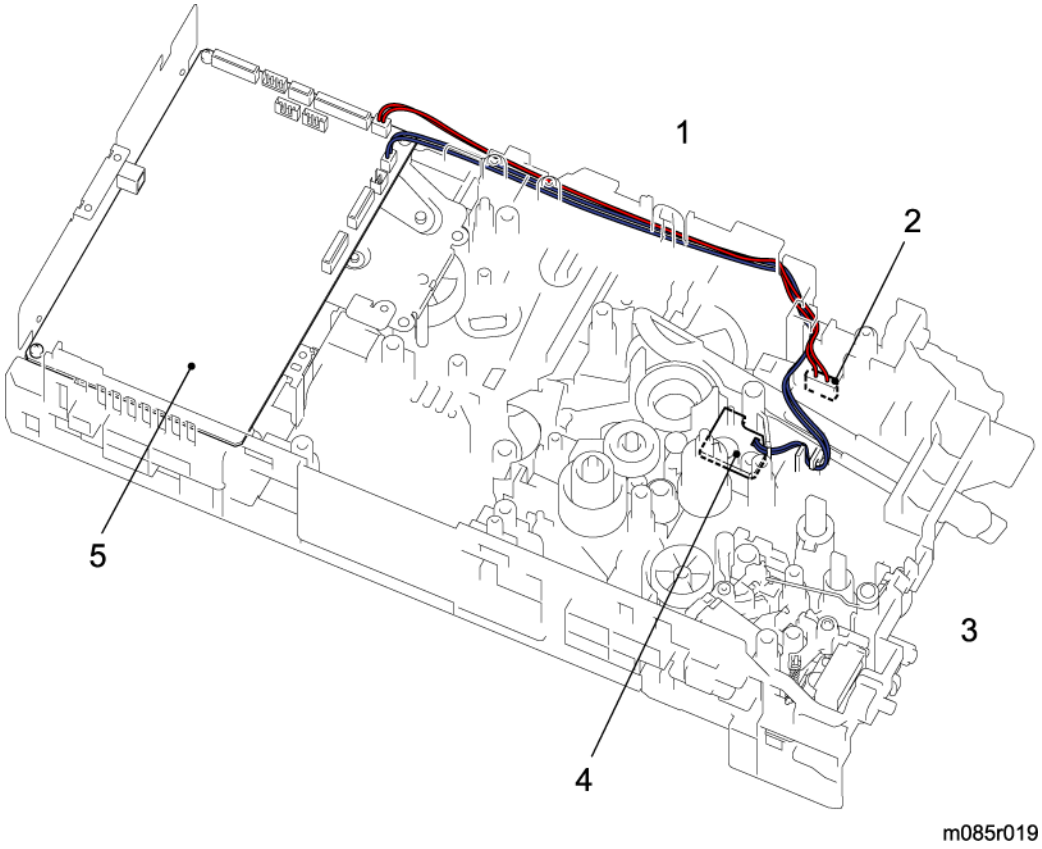
1. Front cover sensor	4. PS PCB unit
2. Toner LED PCB ASSY	5. SW holder
3. Fan motor 60 unit	6. Inlet harness ASSY

4.4.7 TONER LED PCB ASSY / LVPS PCB UNIT / MAIN PCB ASSY / REGISTRATION FRONT SENSOR PCB ASSY / REGISTRATION REAR SENSOR PCB ASSY



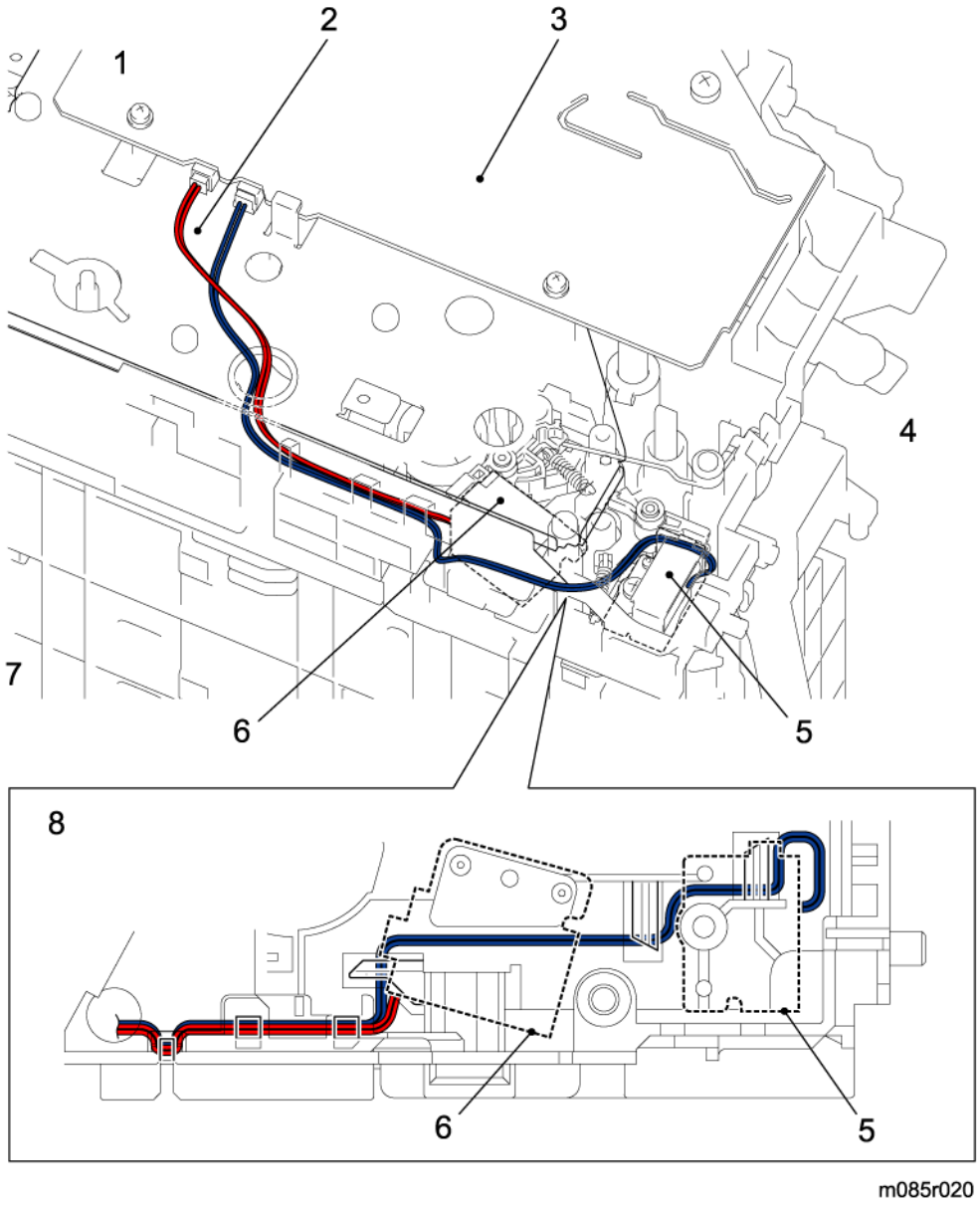
1. Main PCB ASSY (Main Frame L ASSY)	5. Toner LED PCB ASSY
2. <Back side>	6. Registration rear sensor PCB ASSY
3. <Right side>	7. Registration front sensor PCB ASSY
4. PS PCB unit	

4.4.8 TONER SENSOR PCB UNIT ASSY / NEW TONER SENSOR HARNESS ASSY



1. <Left side>	4. Toner sensor PCB unit ASSY
2. New toner sensor harness ASSY	5. Main PCB ASSY
3. <Front side>	

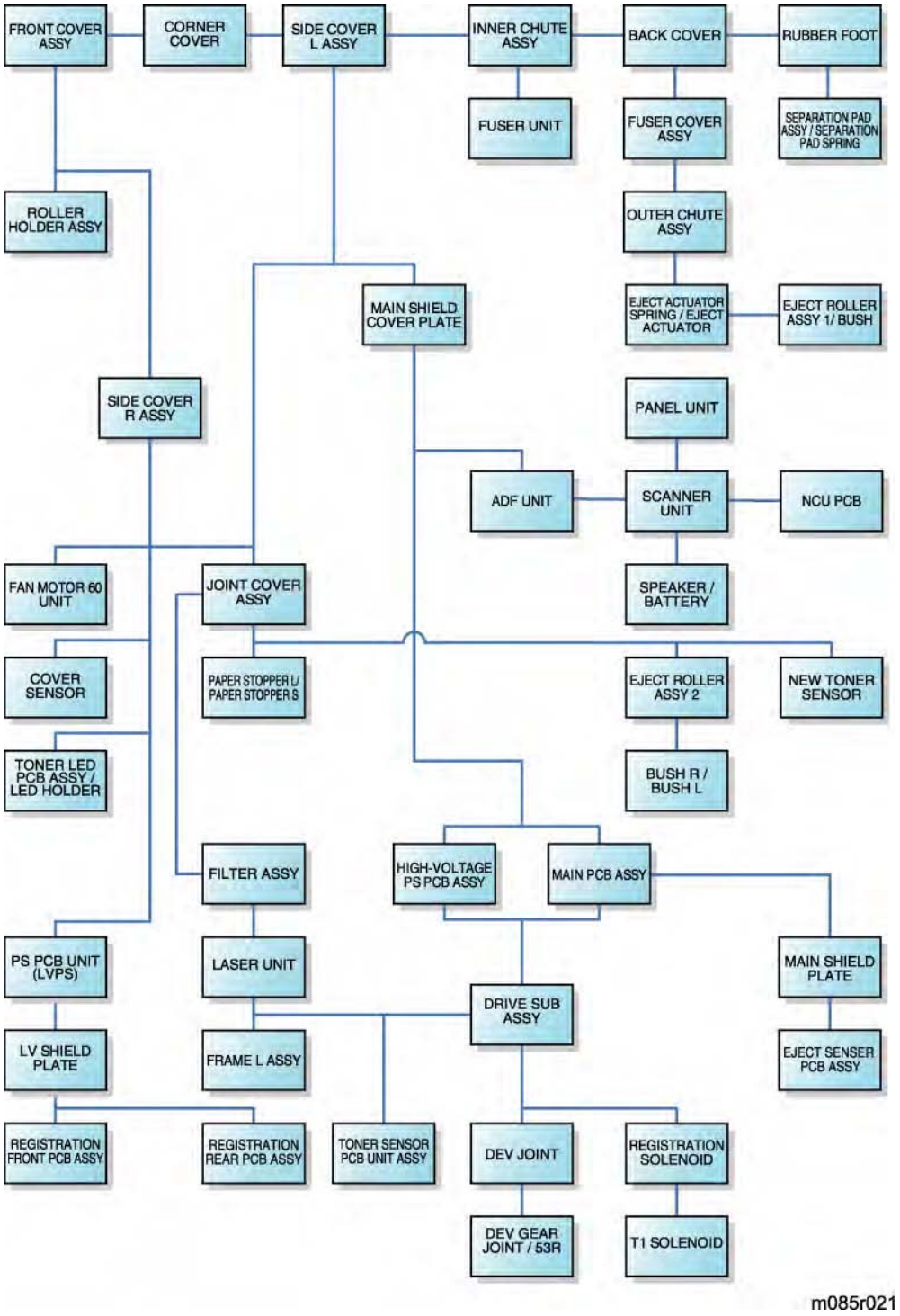
4.4.9 HIGH-VOLTAGE PS PCB / REGISTRATION SOLENOID / T1 SOLENOID



m085r020

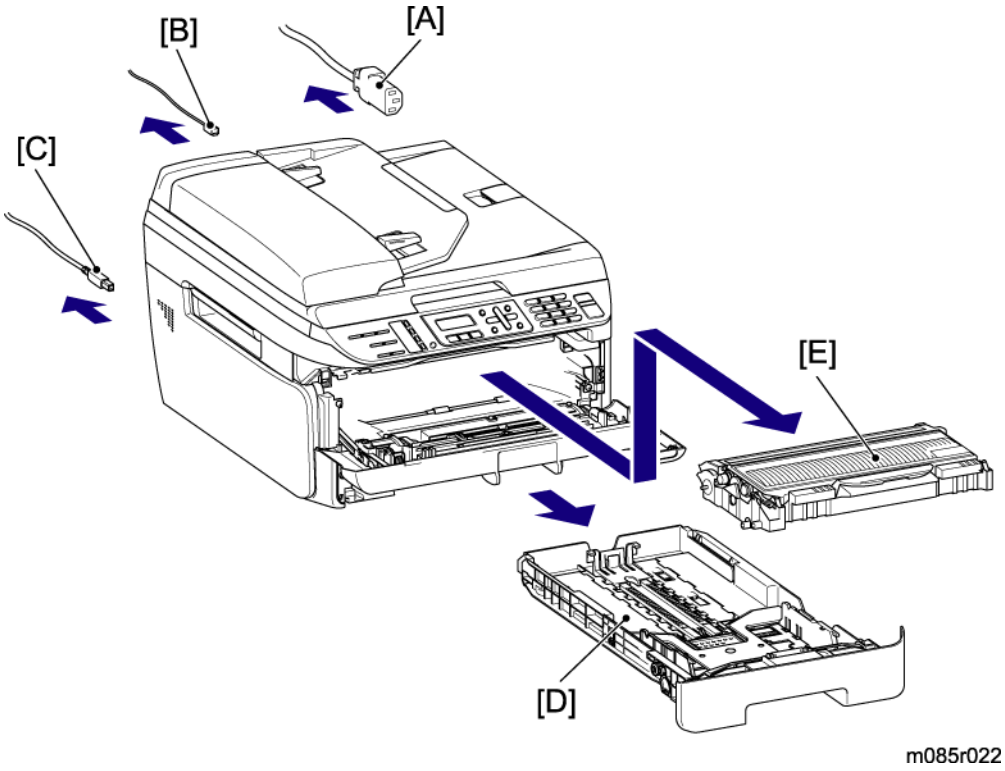
1. <Left side>	5. T1 solenoid
2. Drive sub ASSY	6. Registration solenoid
3. High-voltage PS PCB ASSY	7. <Bottom side>
4. <Front side>	8. <Left side>

4.5 DISASSEMBLE FLOW



4.6 COMMON DISASSEMBLE PROCEDURE

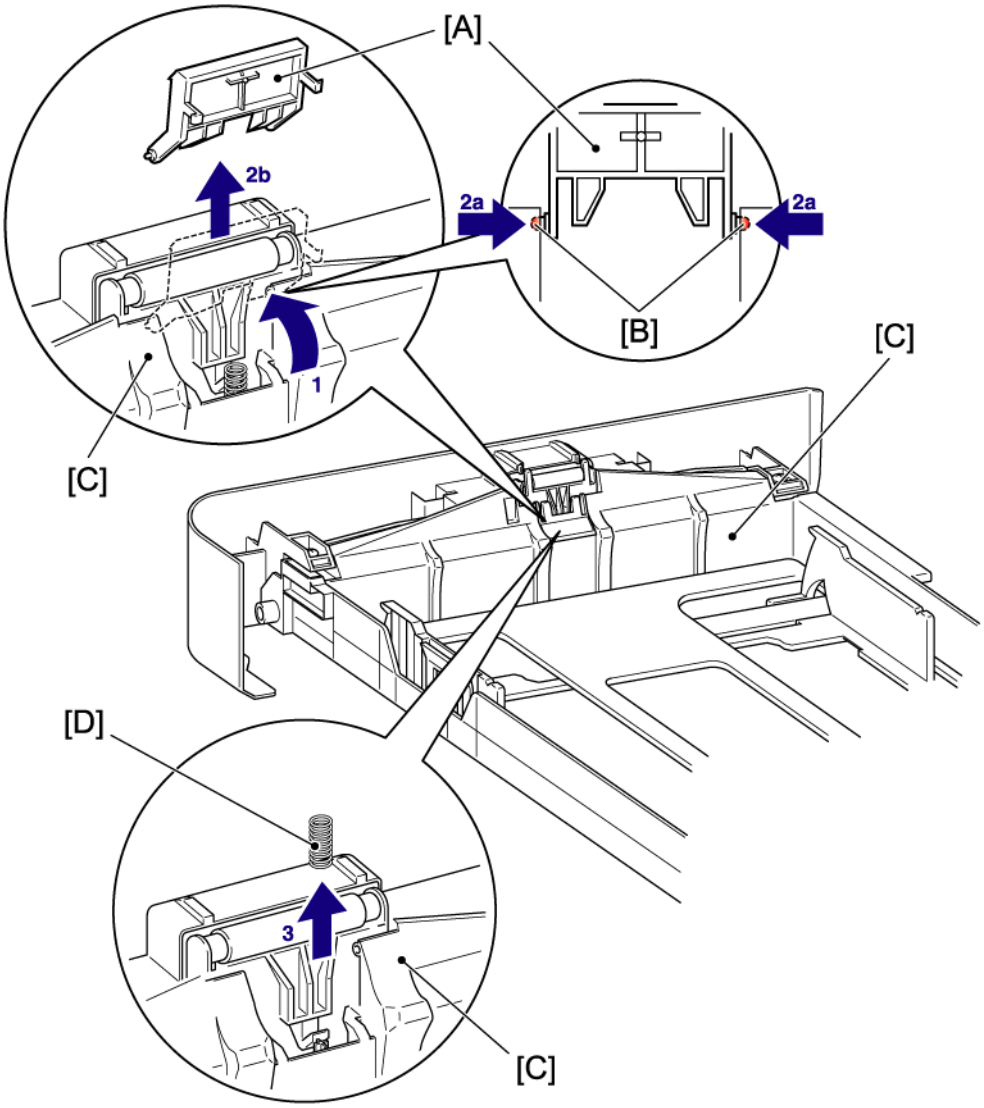
Preparation



Prior to proceeding with the disassembly procedure,

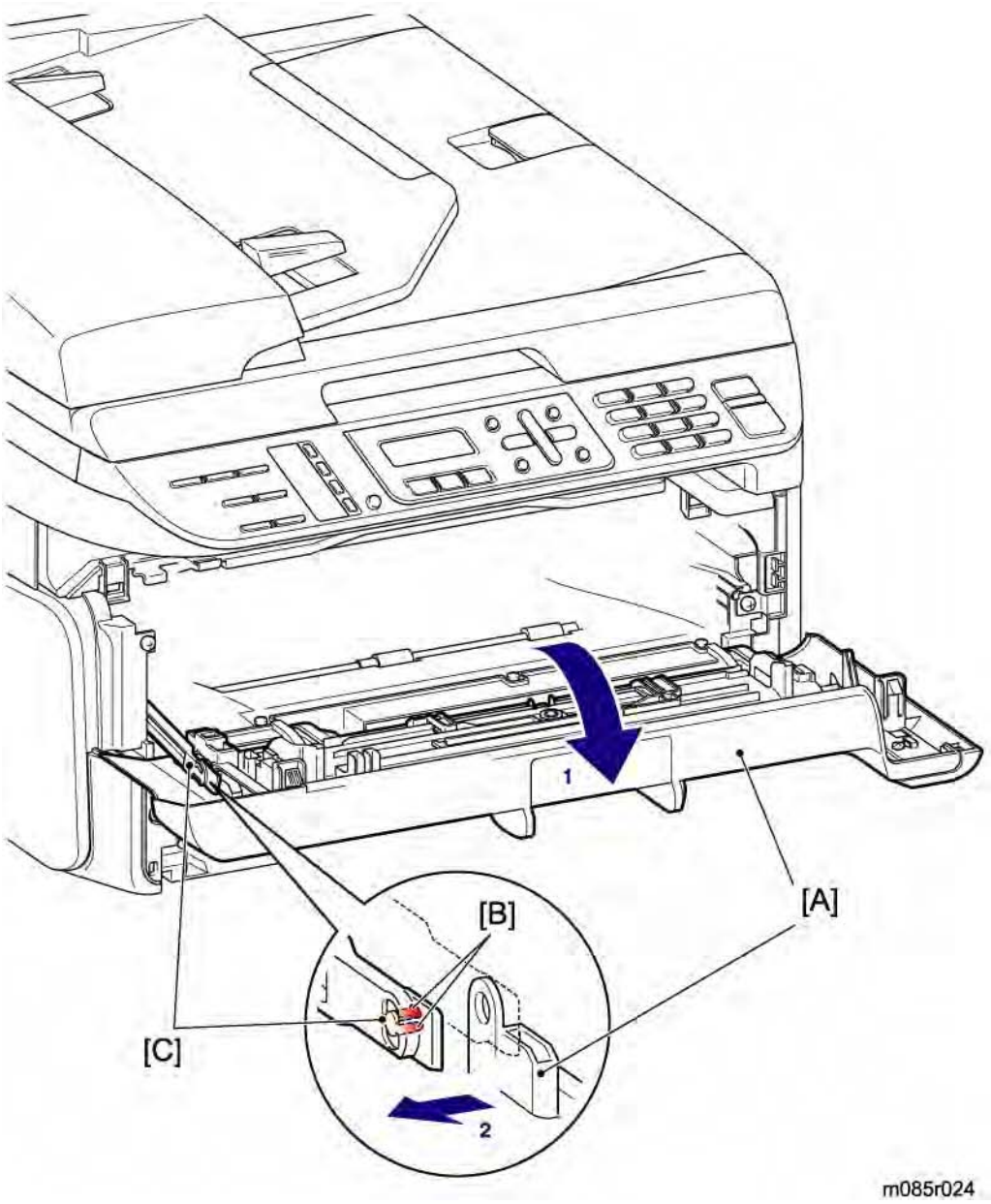
1. Unplug
   - the AC cord [A],
   - the modular jack of the telephone line [B],
   - the USB cable [C], if connected,
   - the modular jack of the external telephone set if connected.
2. Remove
   - the Paper tray [D],
   - the Toner cartridge and Drum unit [E]

4.6.1 SEPARATION PAD ASSY

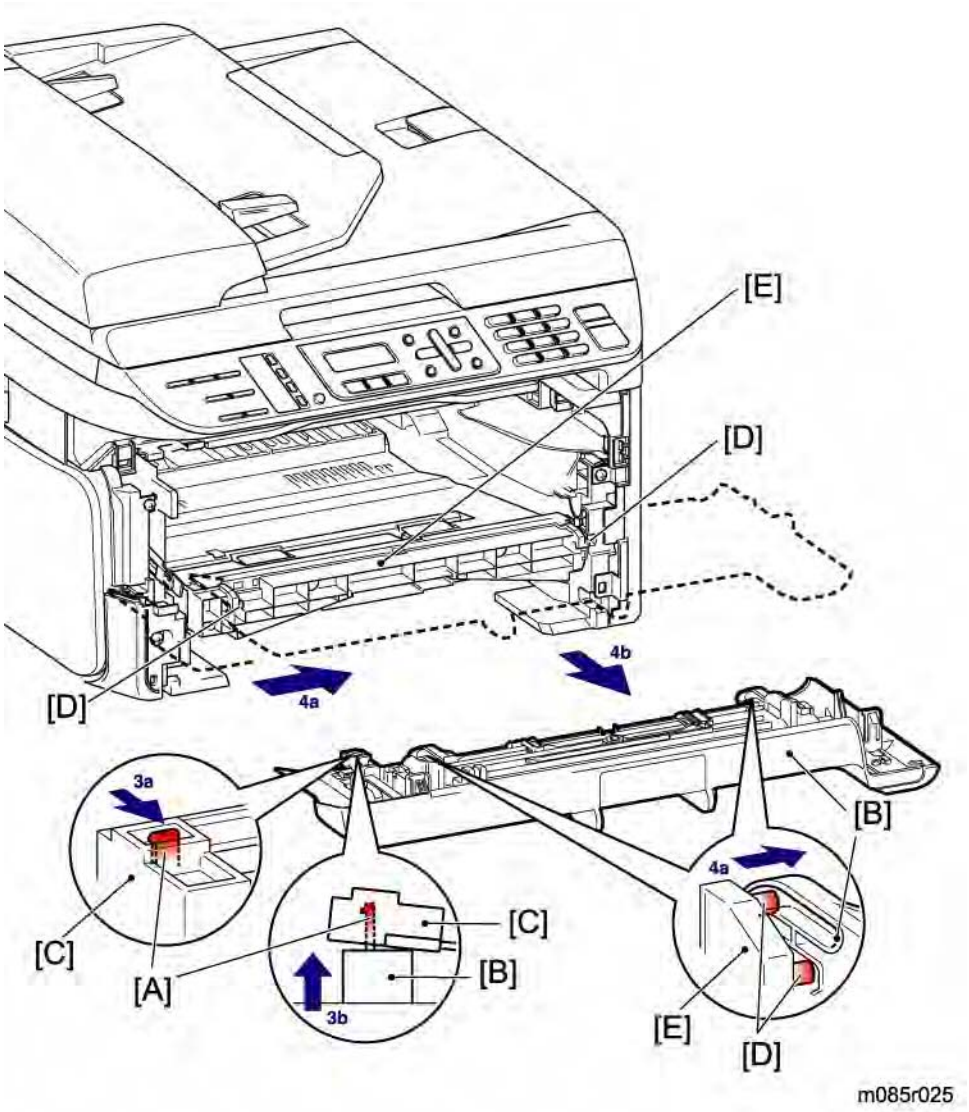


1. Lift up the Separation pad ASSY [A].
2. Release the Boss [B] to remove the Separation pad ASSY [A] from the Paper tray unit [C].
3. Remove the Separation pad spring [D] from the Paper tray unit [C].

4.6.2 FRONT COVER ASSY

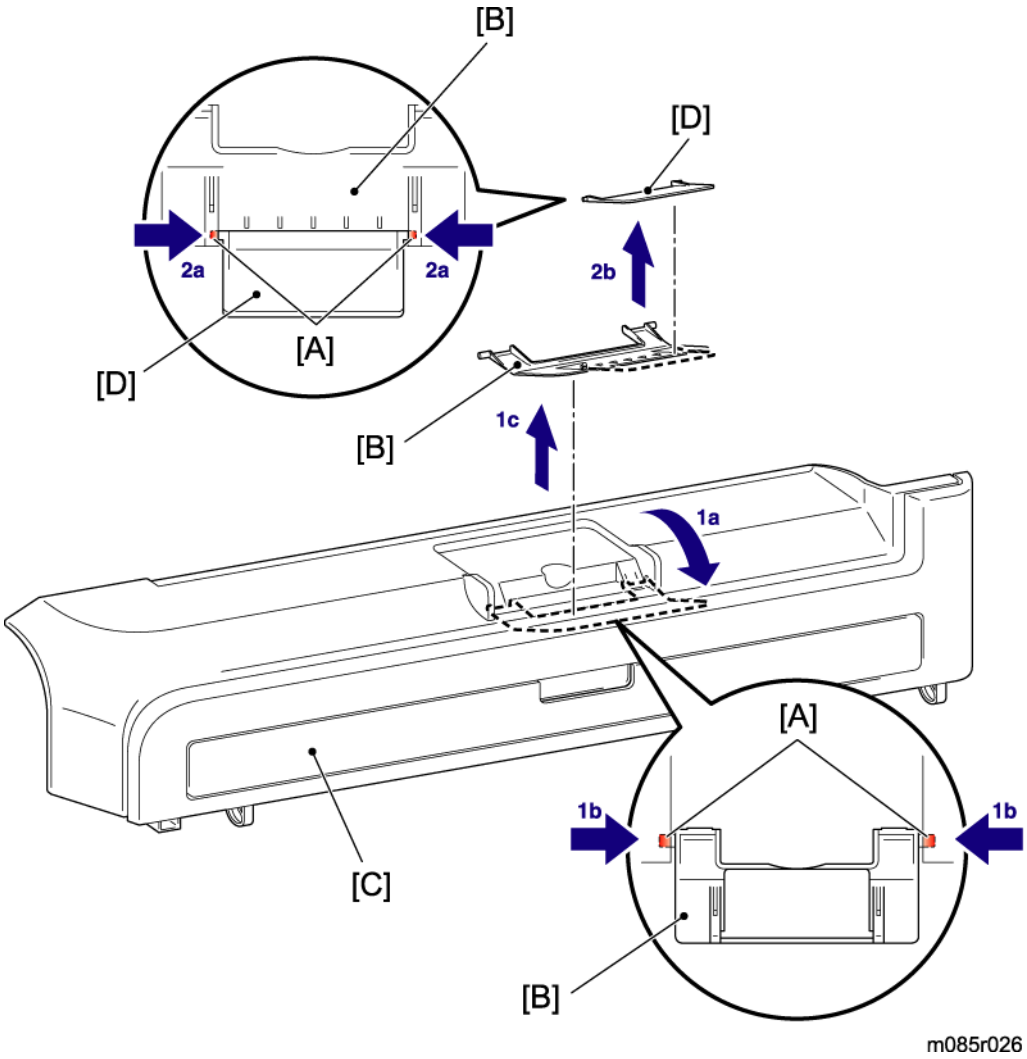


1. Open the Front cover ASSY [A].
2. Release the Hook [B] to remove the DEV joint link [C] from the Front cover ASSY [A].



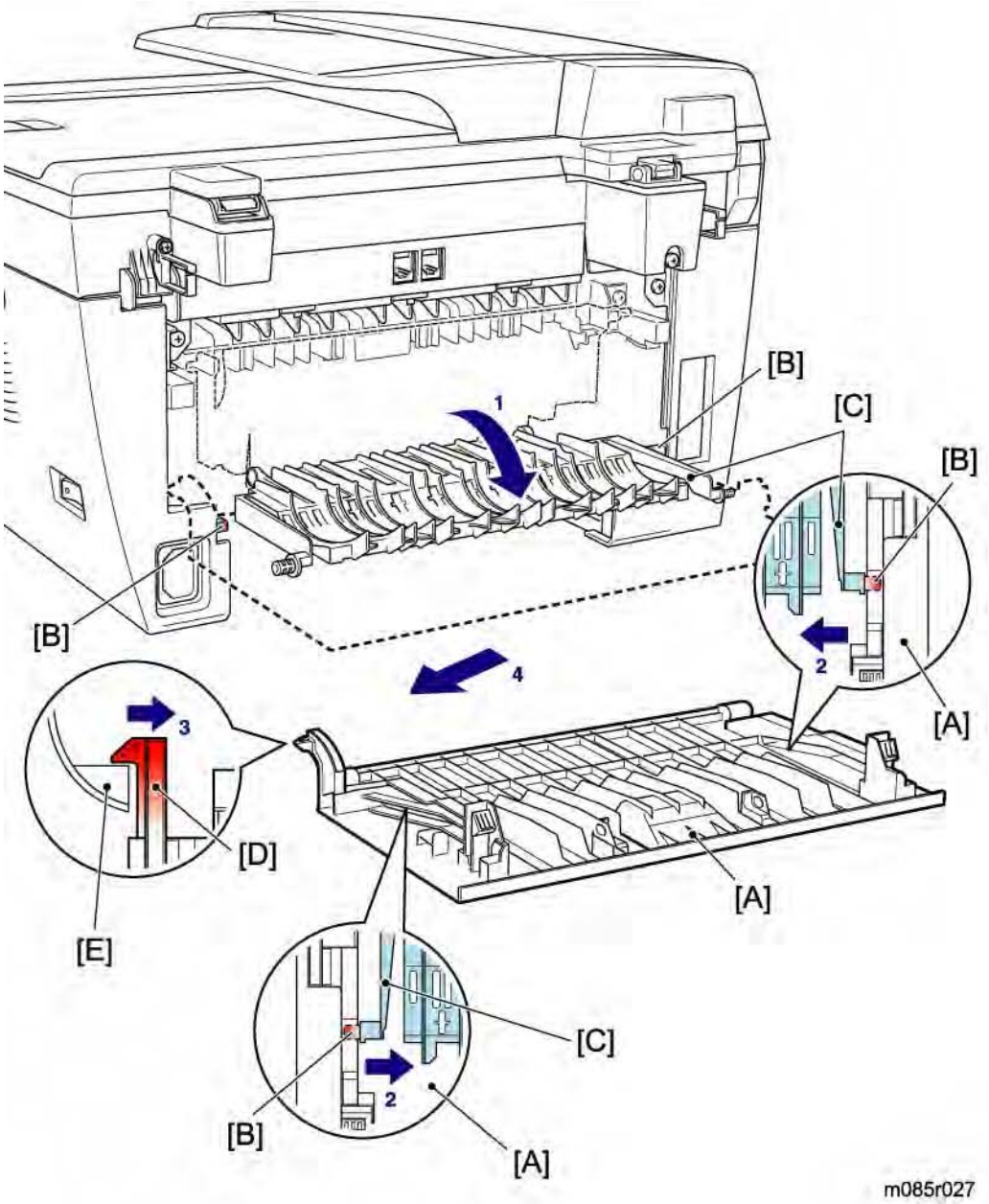
3. Release the Hook [A] of the Front cover ASSY [B] from the Front cover top [C].
4. Remove the Boss [D] of the Front chute ASSY [E], and then remove the Front cover ASSY [B] from the Main body.

4.6.3 PAPER STOPPER L / PAPER STOPPER S



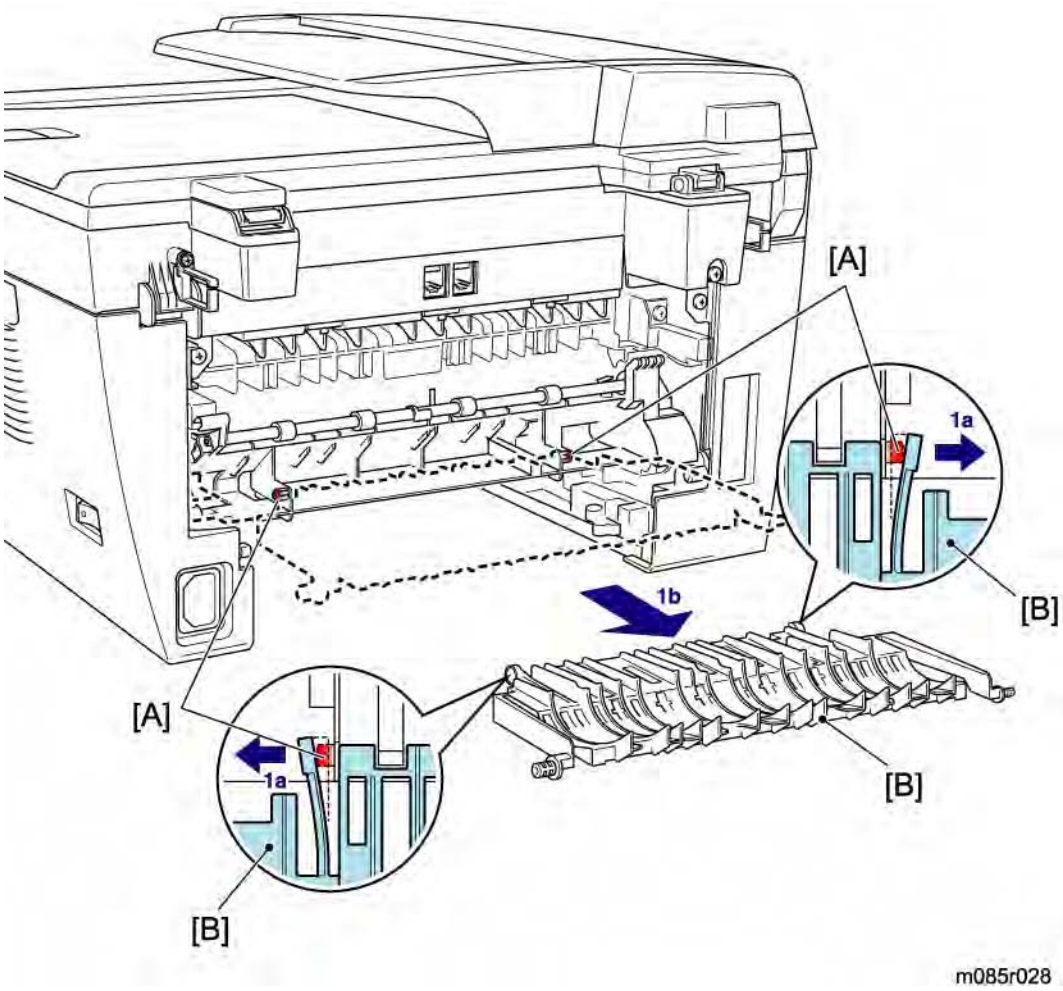
1. Release the Boss [A] to remove the Paper stopper L [B] from the Front cover ASSY [C].
2. Release the Boss [A] to remove the Paper stopper S [D] from the Paper stopper L [B].

4.6.4 BACK COVER



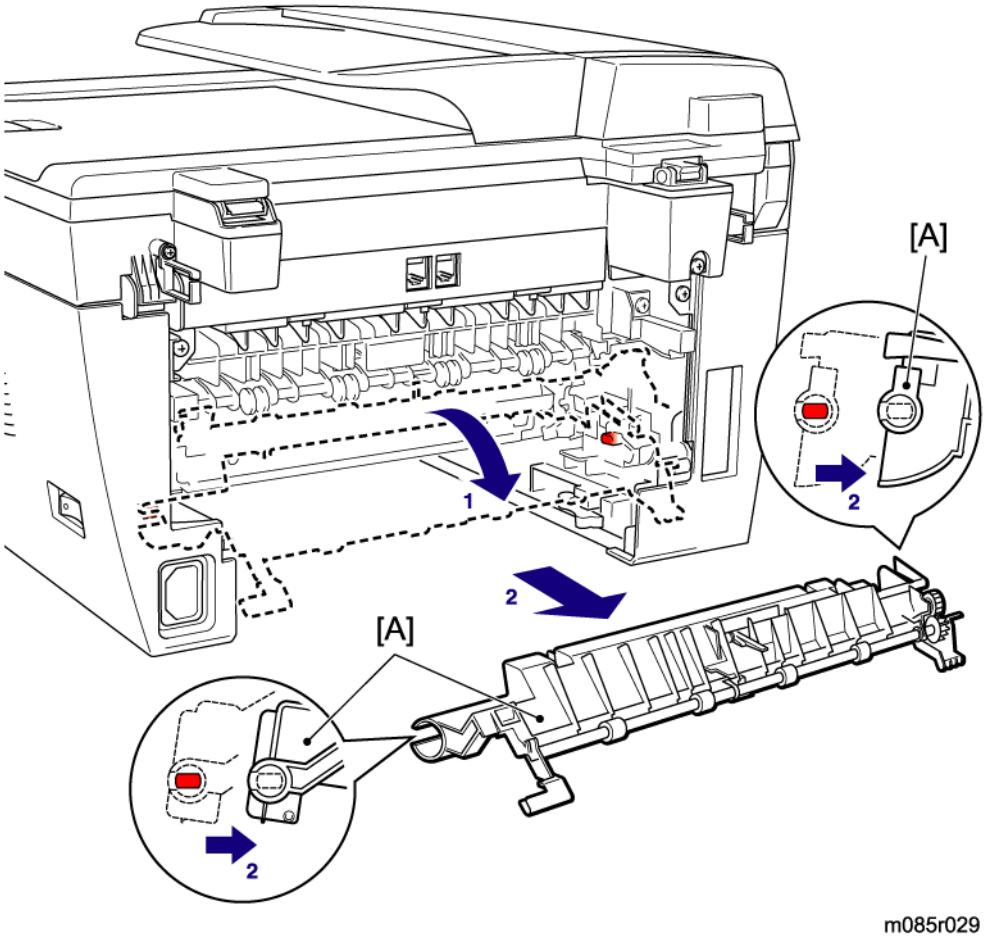
1. Open the Back cover [A].
2. Release the Boss [B] of the Outer chute ASSY [C] from the Back cover [A].
3. Release the Hook [D] from the Side cover R ASSY [E].
4. Slide the Back cover [A] from the Main body, and remove it.

4.6.5 OUTER CHUTE ASSY



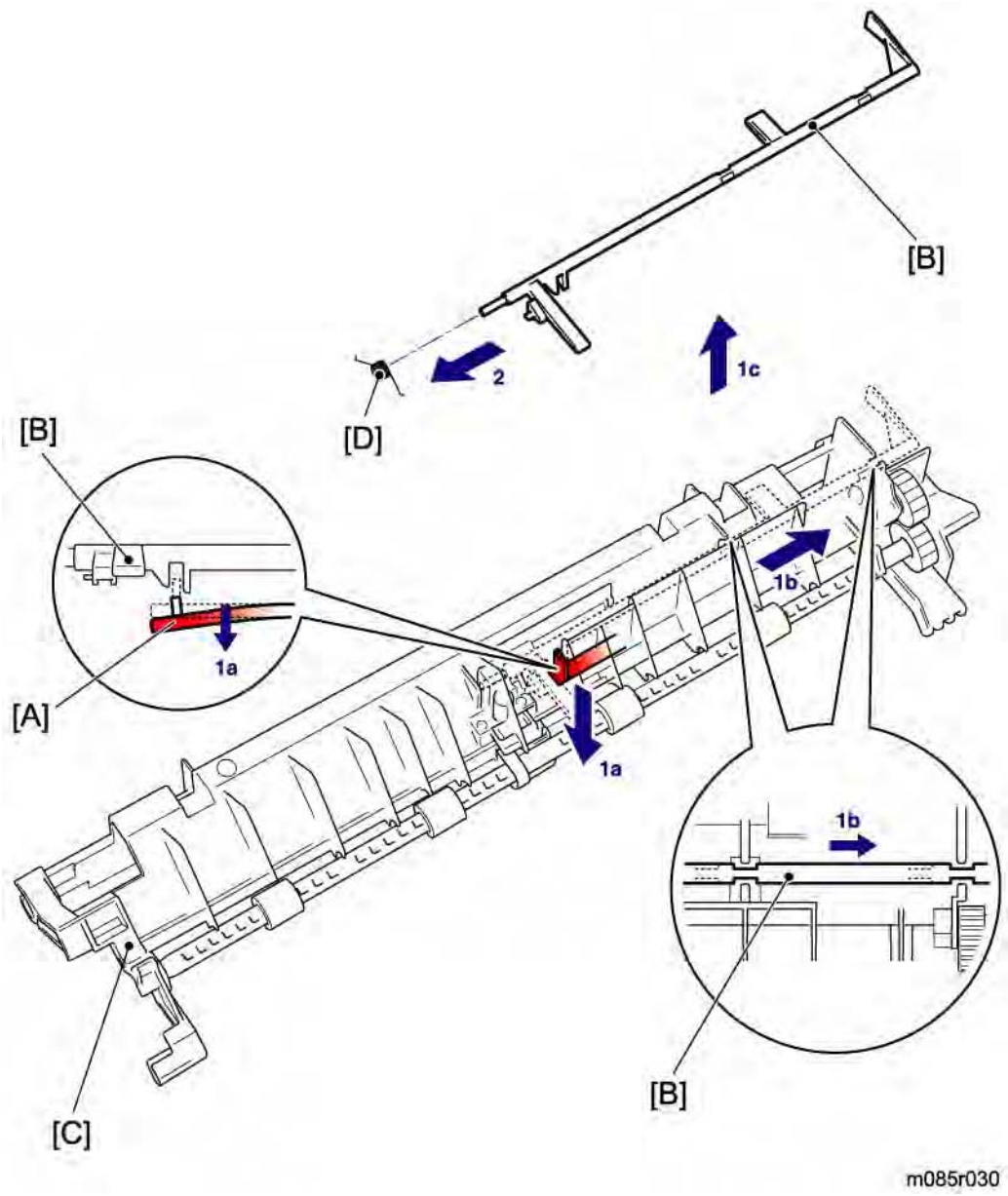
1. Release the Boss [A] to remove the Outer chute ASSY [B] from the Main body.

4.6.6 FUSER COVER ASSY



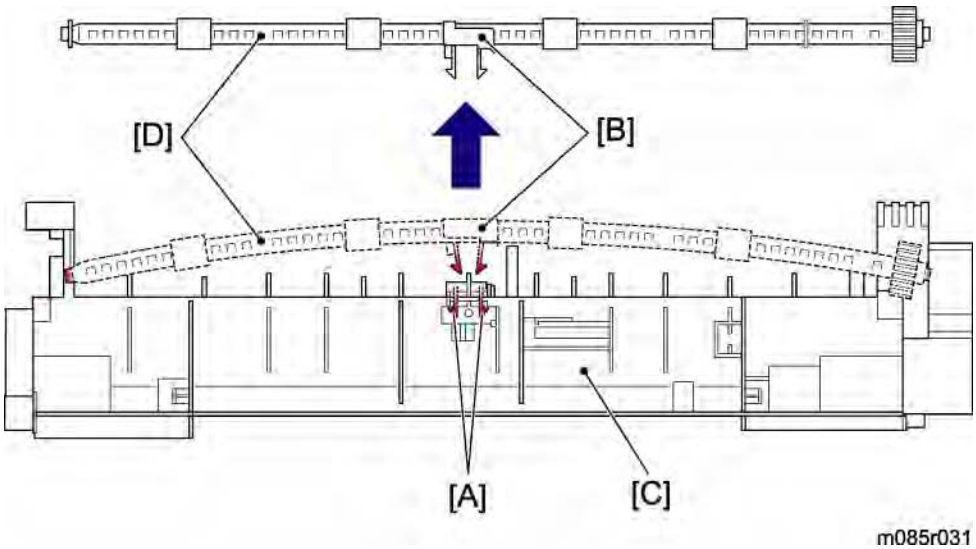
1. Pull down the Fuser cover ASSY [A].
2. Remove the Fuser cover ASSY [A] from the Main body.

4.6.7 EJECT ACTUATOR / EJECT ACTUATOR SPRING

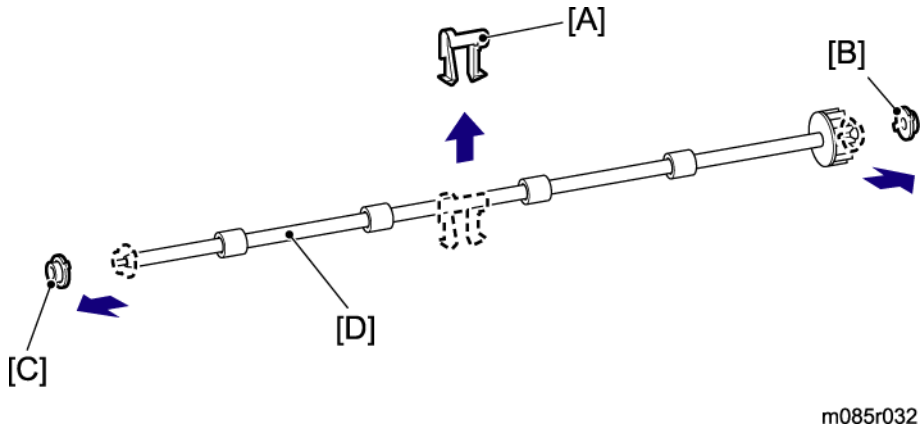


1. Release the Hook [A] to slide the Eject actuator [B], and then remove the Eject actuator [B] from the Fuser cover ASSY [C].
2. Remove the Eject actuator spring [D] from the Eject actuator [B].

4.6.8 EJECT ROLLER ASSY 1 / BUSH C / BUSH R / BUSH L

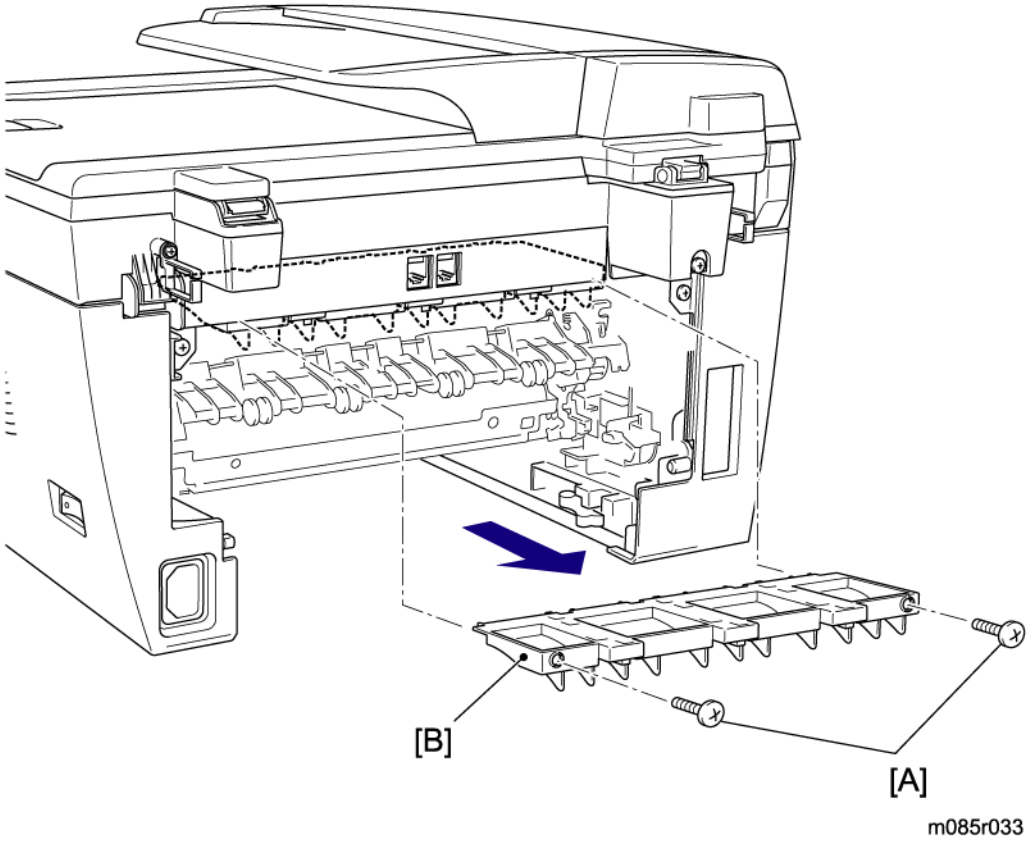


1. Release the Hook [A] of the Bush C [B] from the Fuser cover ASSY [C].
2. Remove the Eject roller ASSY 1 [D] from the Fuser cover ASSY [C].



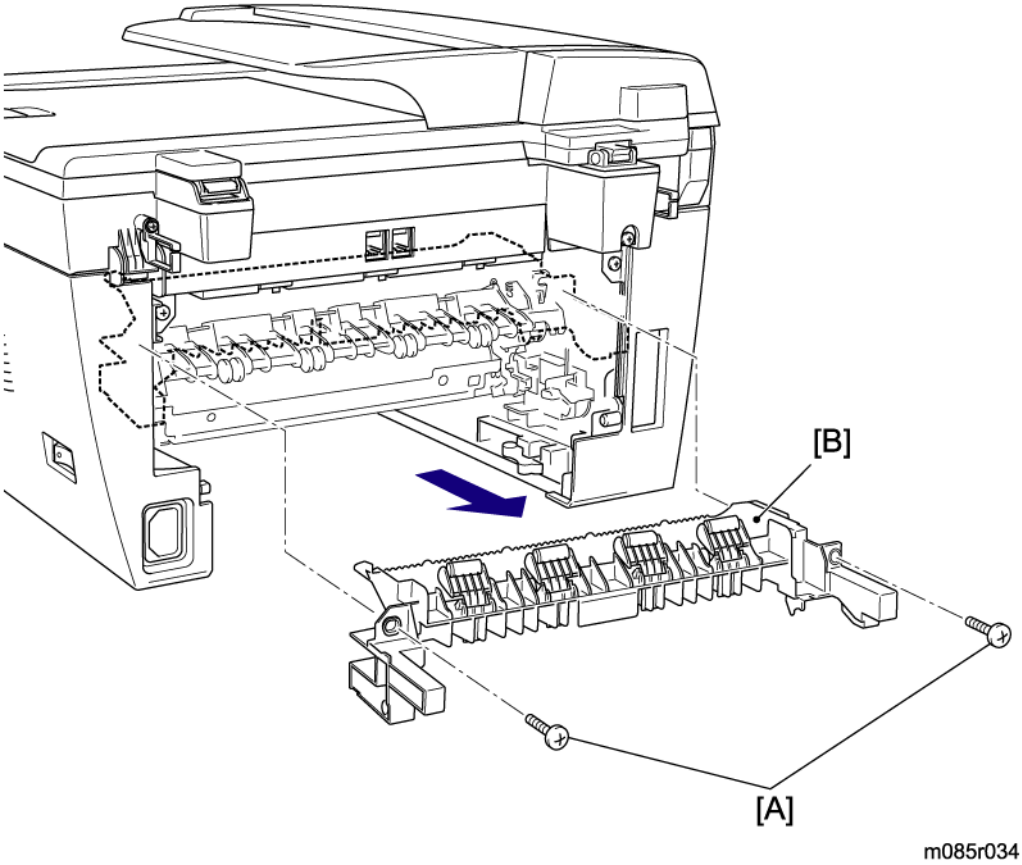
3. Remove the Bush C [A], the Bush R [B] and the Bush L [C] from the Eject roller ASSY 1 [D].

4.6.9 JOINT COVER SUB CHUTE ASSY



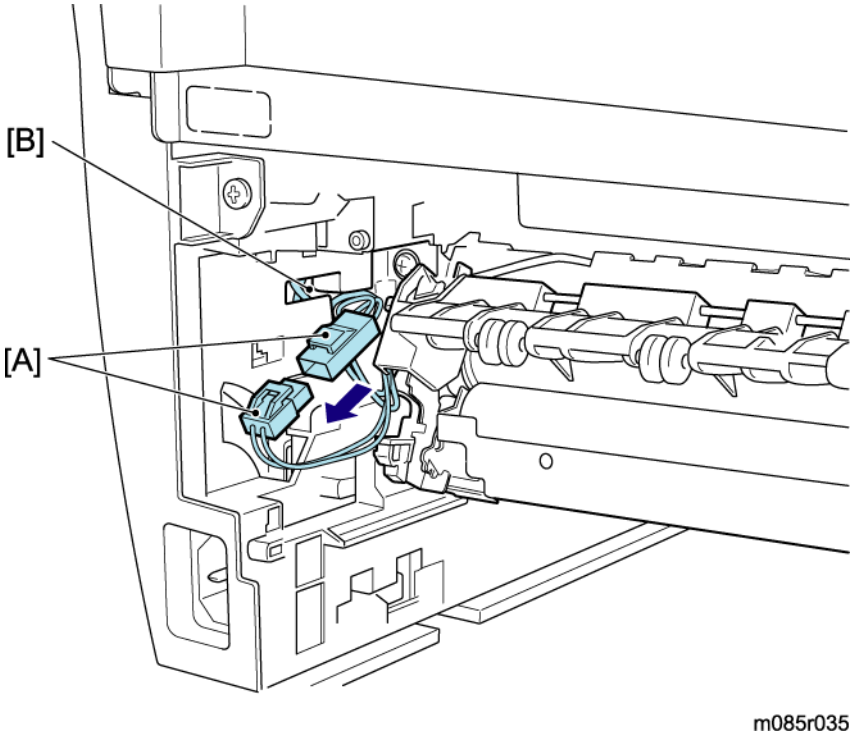
1. Remove the two Taptite bind B M4x12 screws [A], and then remove the Joint cover sub chute ASSY [B] from the Main body.

4.6.10 INNER CHUTE ASSY



1. Remove the two Taptite bind B M4x12 screws [A], and then remove the Inner chute ASSY [B] from the Main body.

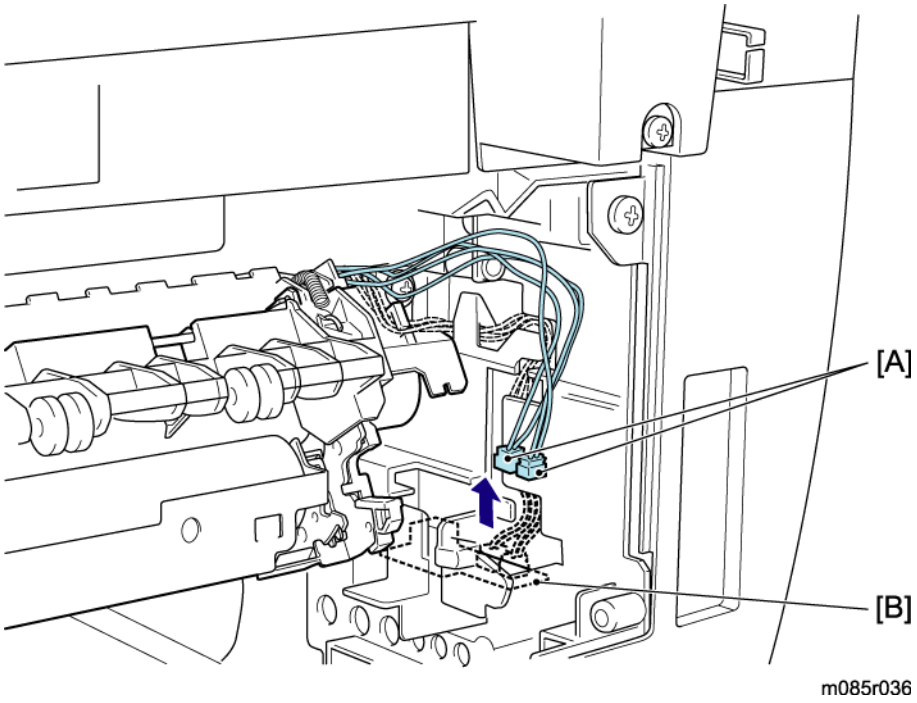
4.6.11 FUSER UNIT



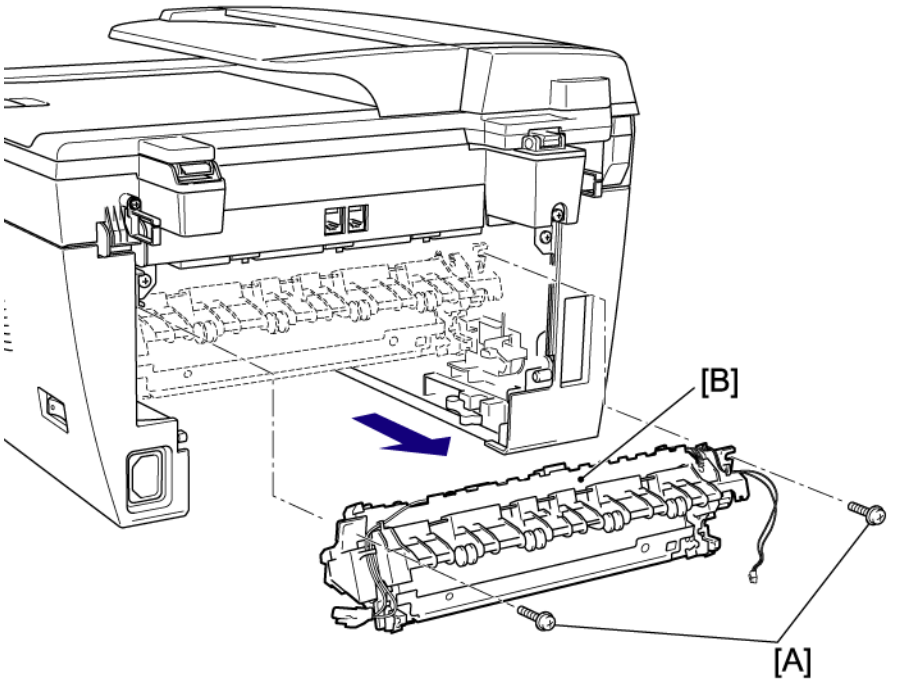
1. Disconnect the Connector [A].

Important

- Pull out the Connector [A] from the Housing part [B] of the Main body left side.

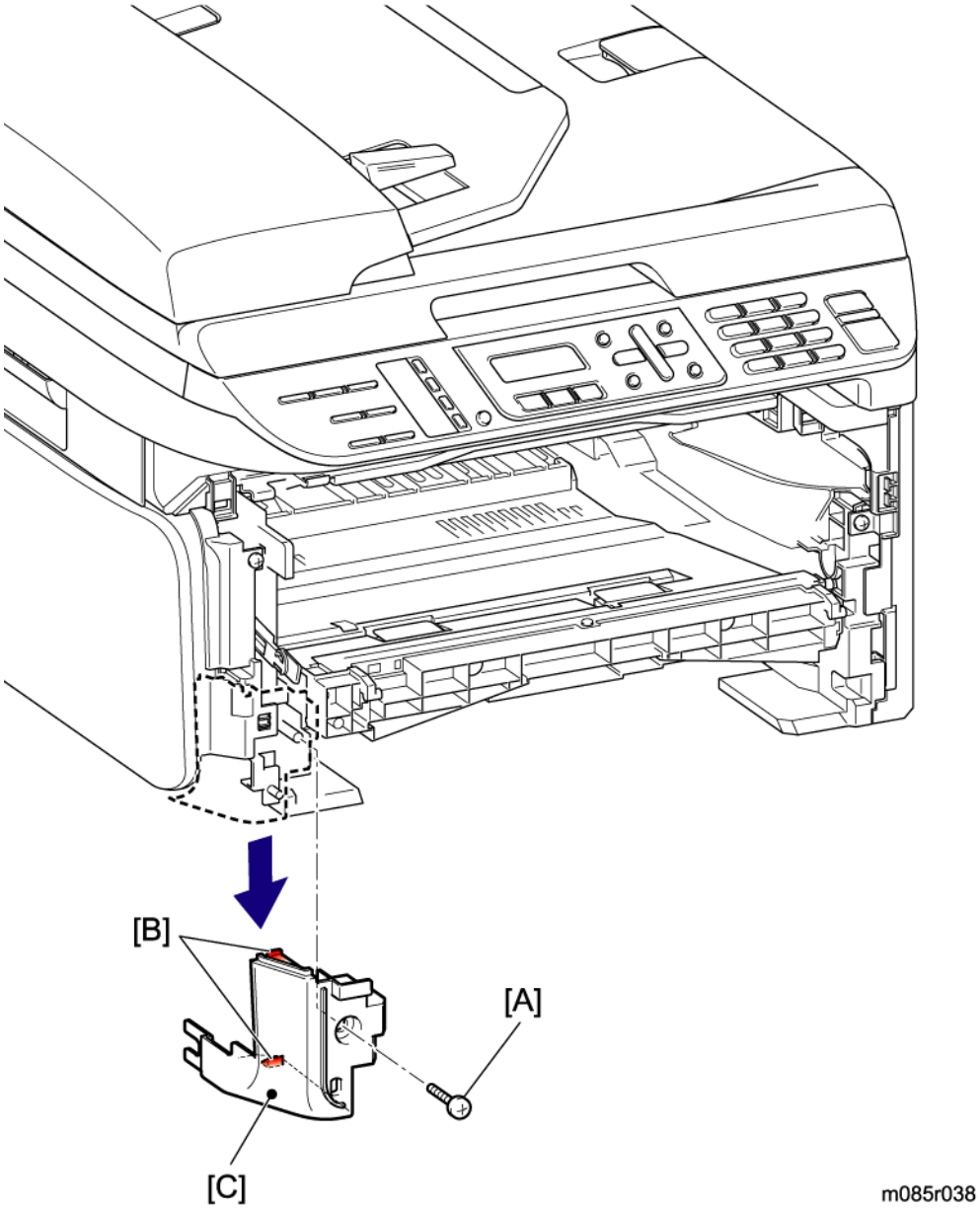


2. Disconnect the two Connectors [A] from the Eject sensor PCB ASSY [B].



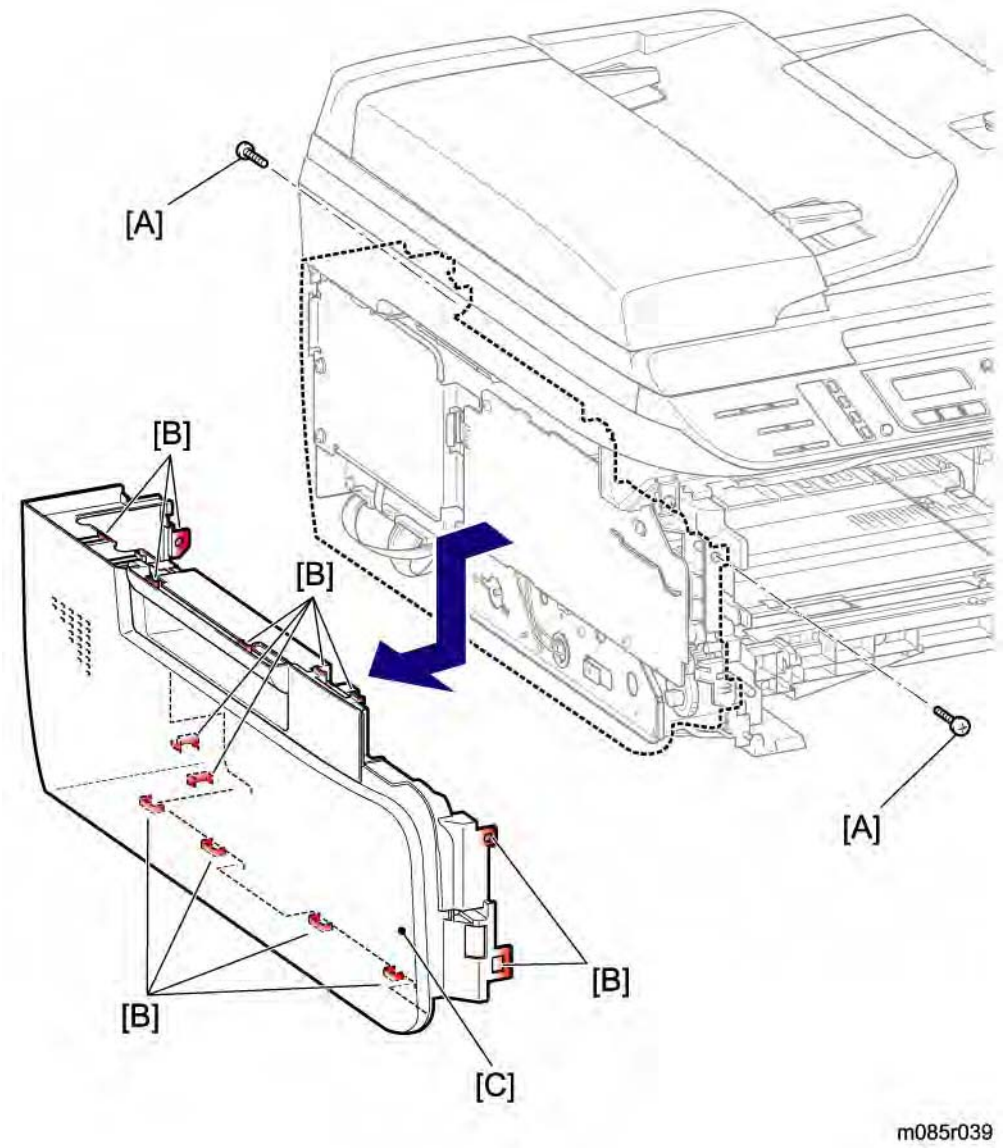
3. Remove the two Taptite pan B M4x14 screws [A], and then remove the Fuser unit [B] from the Main body.

4.6.12 CORNER COVER



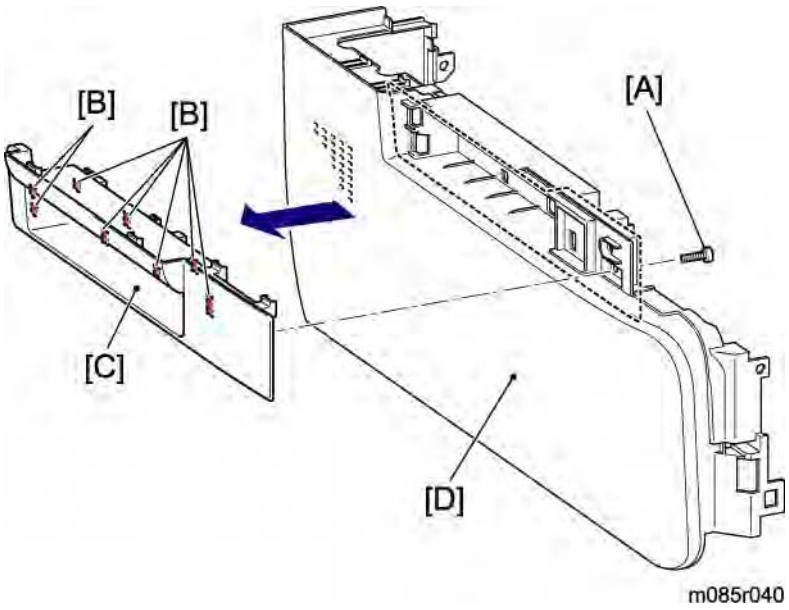
1. Remove the Taptite bind B M4x12 screw [A].
2. Release the Hook [B] to remove the Corner cover [C] from the Main body.

4.6.13 SIDE COVER L ASSY



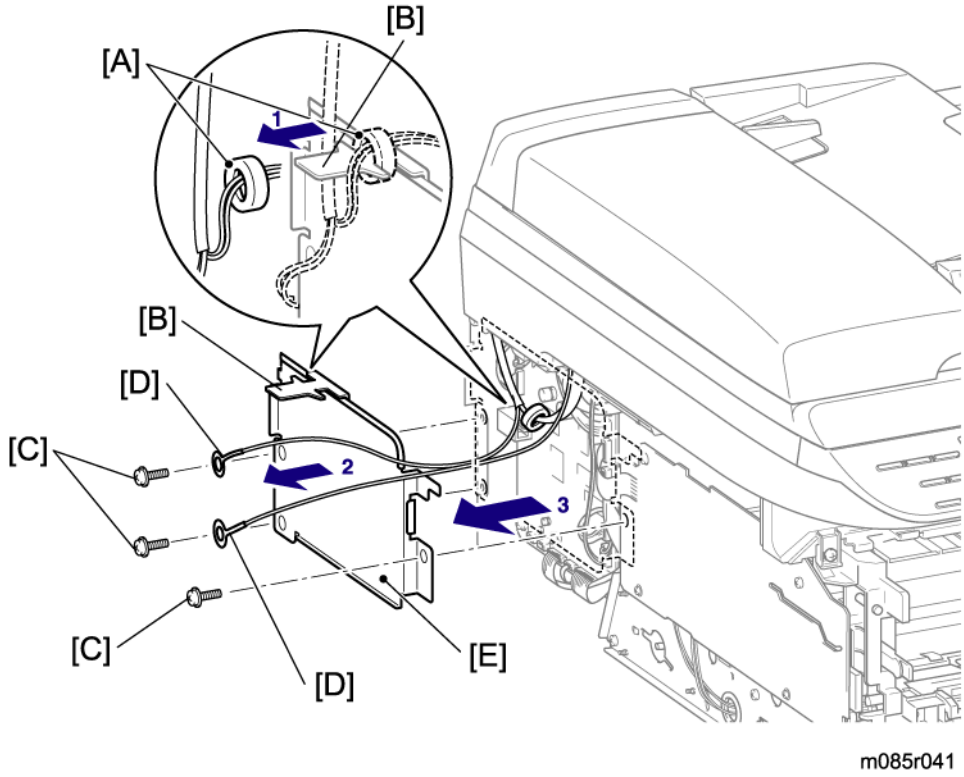
1. Remove the two Taptite bind B M4x12 screws [A].
2. Release the Hook [B] to remove Side cover L ASSY [C] from the Main body.

4.6.14 SIDE COVER SUB L



1. Remove the Taptite bind B M4x12 screw [A].
2. Release the Hook [B] to remove the Side cover sub L [C] from the Side cover L ASSY [D].

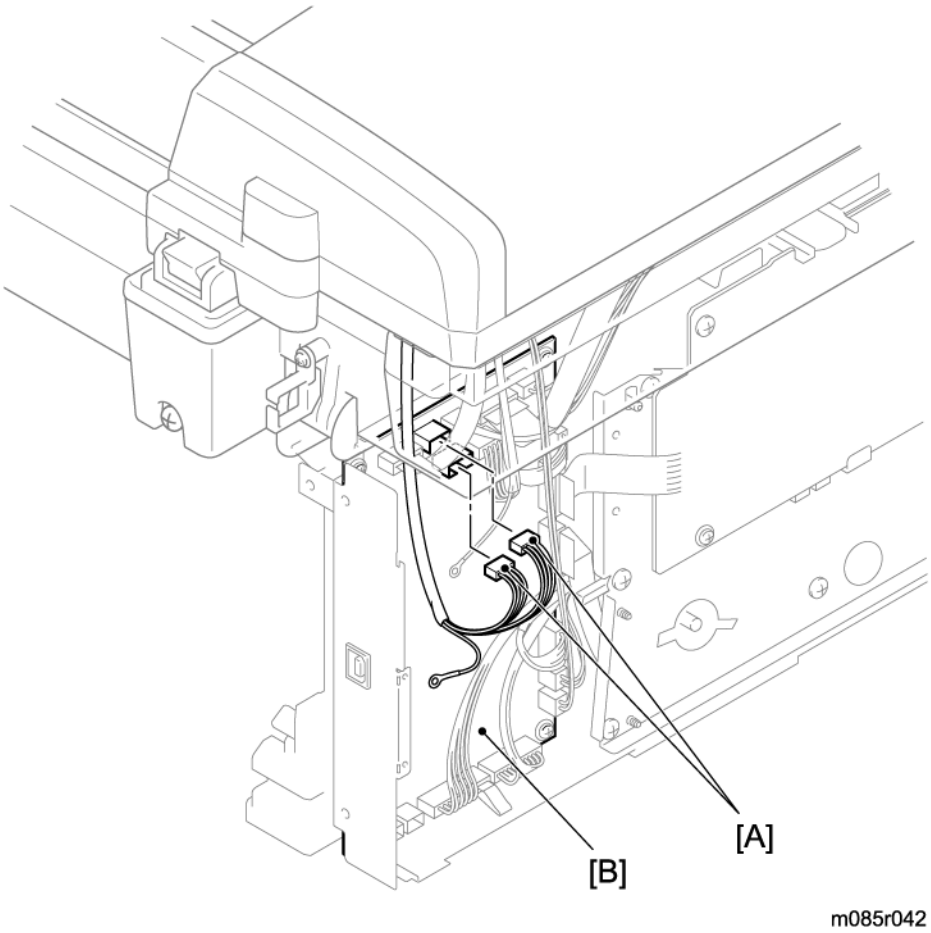
4.6.15 MAIN SHIELD COVER PLATE



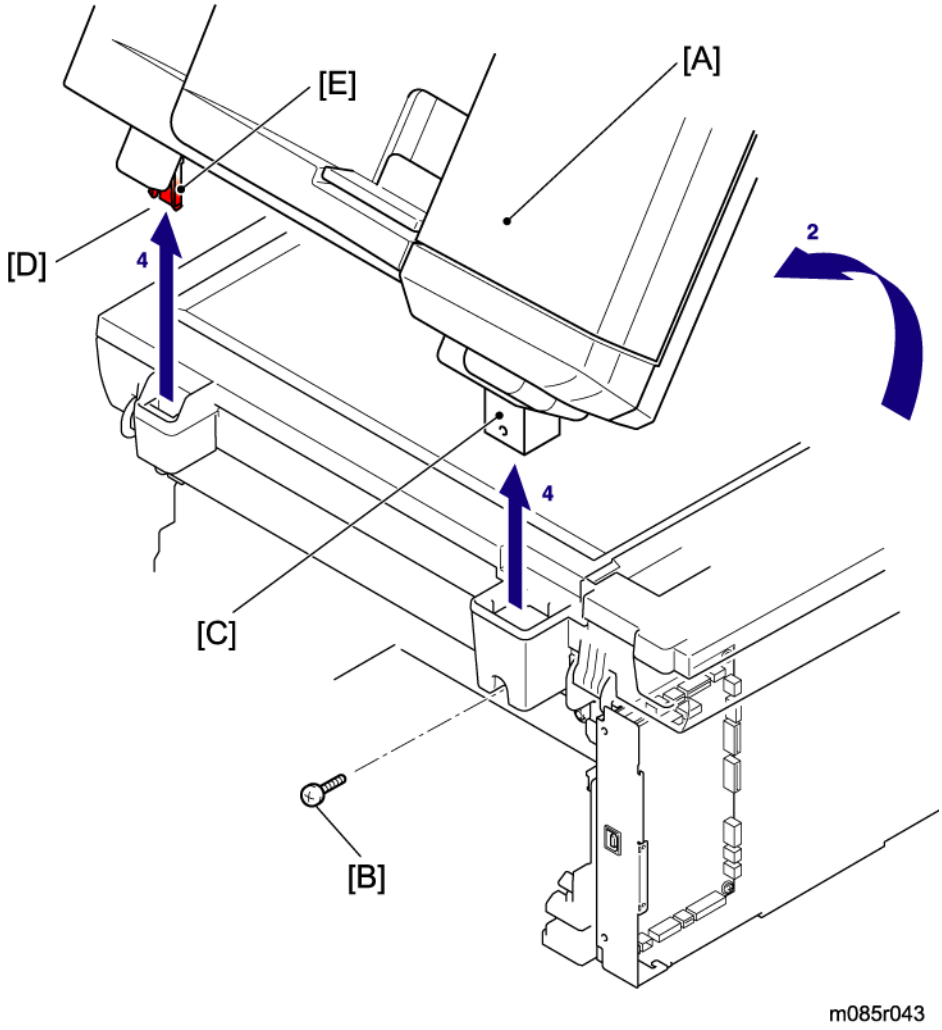
1. Remove the Ferrite core [A] from the Core holder [B].
2. Remove the two Taptite cup S M3x6 SR screws [C], and then remove the two FG harness [D] from the Main body.
3. Remove the Taptite cup S M3x6 SR screw [C], and then remove the Main shield cover plate [E] from the Main body.

4.7 ADF DISASSEMBLE PROCEDURE

4.7.1 ADF UNIT

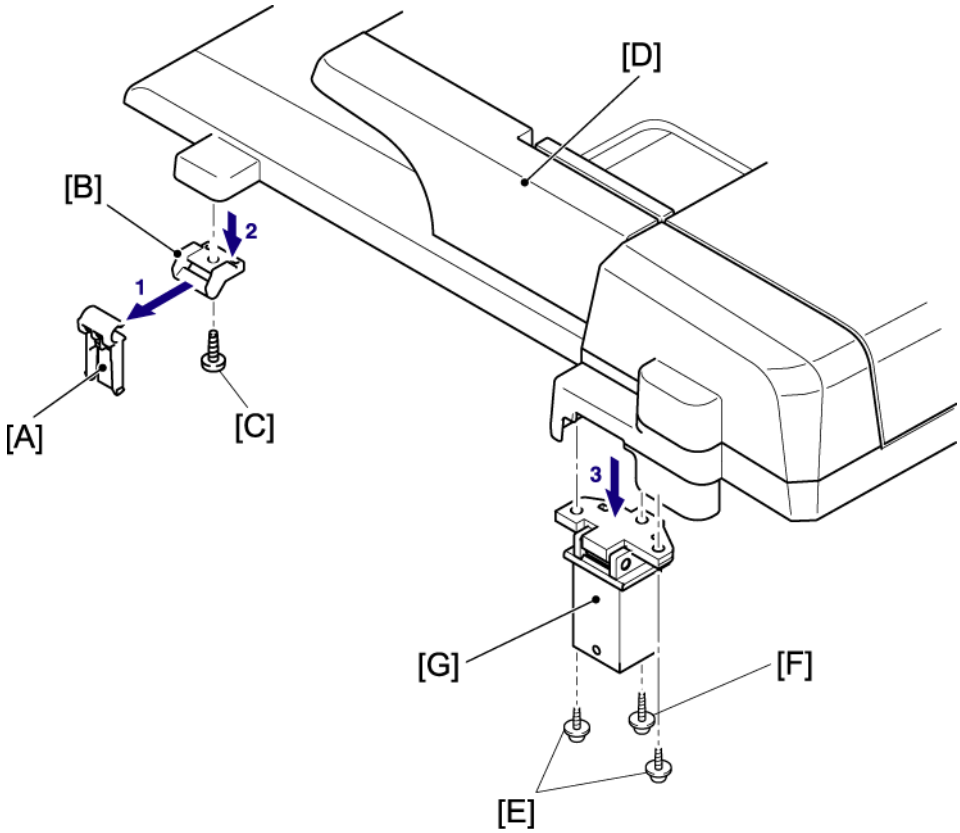


1. Remove the two Connectors [A] from the Main PCB ASSY [B].



2. Open the ADF unit [A].
3. Remove the Taptite bind B M4x12 screw [B] from the Hinge ASSY L [C].
4. Release the Hook [D] of the Hinge R [E] to remove the ADF unit [A] from the Main body.

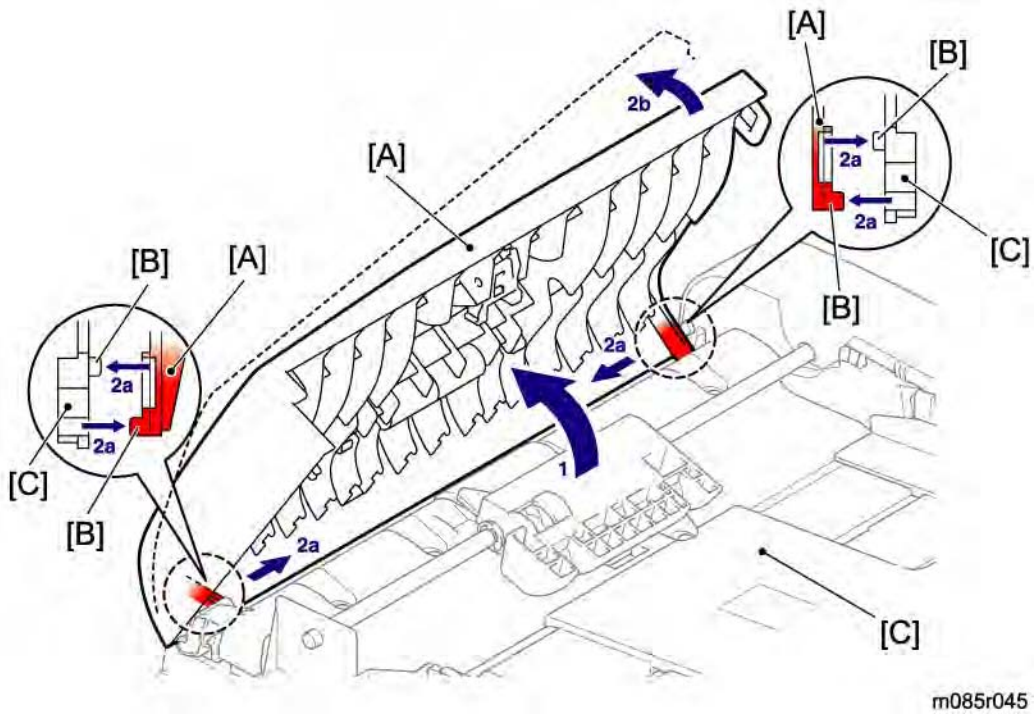
4.7.2 HINGE R / HINGE ARM / HINGE ASSY L



m085r044

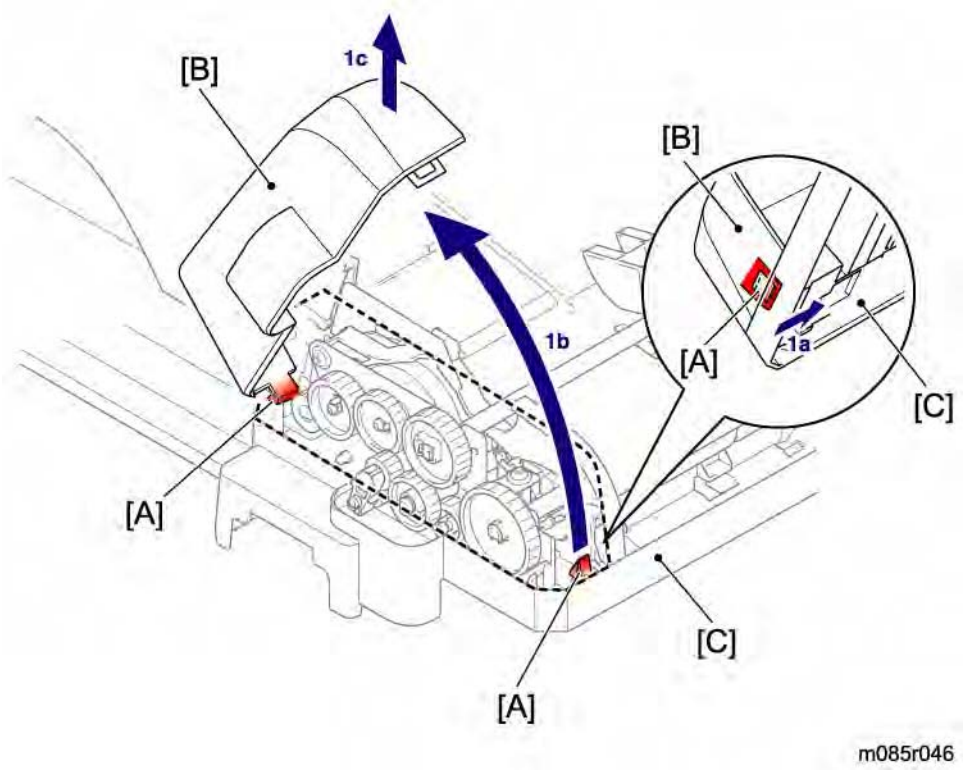
1. Remove the Hinge R [A] from the Hinge arm [B].
2. Remove the Taptite bind B M4x12 screw [C], and then remove the Hinge arm [B] from the ADF unit [D].
3. Remove the two Taptite cup B M3x10 screws [E] and the Taptite cup S M3x12 screw [F], and then remove the Hinge ASSY L [G] from the ADF unit [D].

4.7.3 ADF COVER ASSY



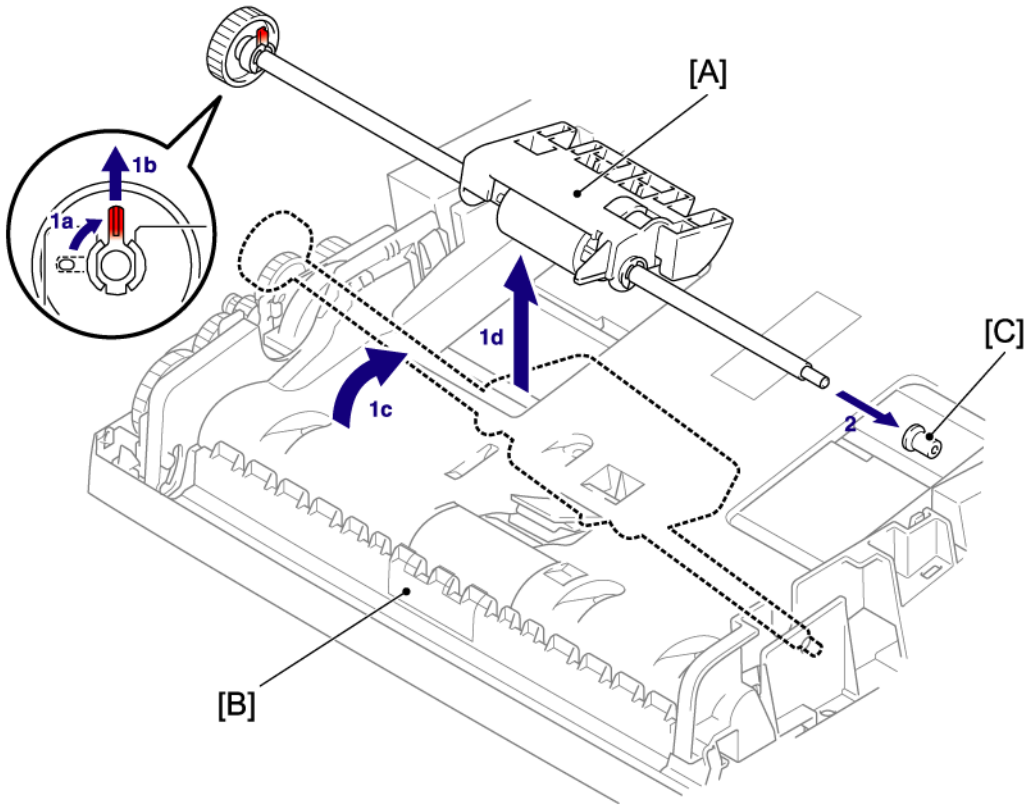
1. Open the ADF cover [A].
2. Release the Boss [B] to remove the ADF cover [A] from the ADF unit [C].

4.7.4 GEAR COVER



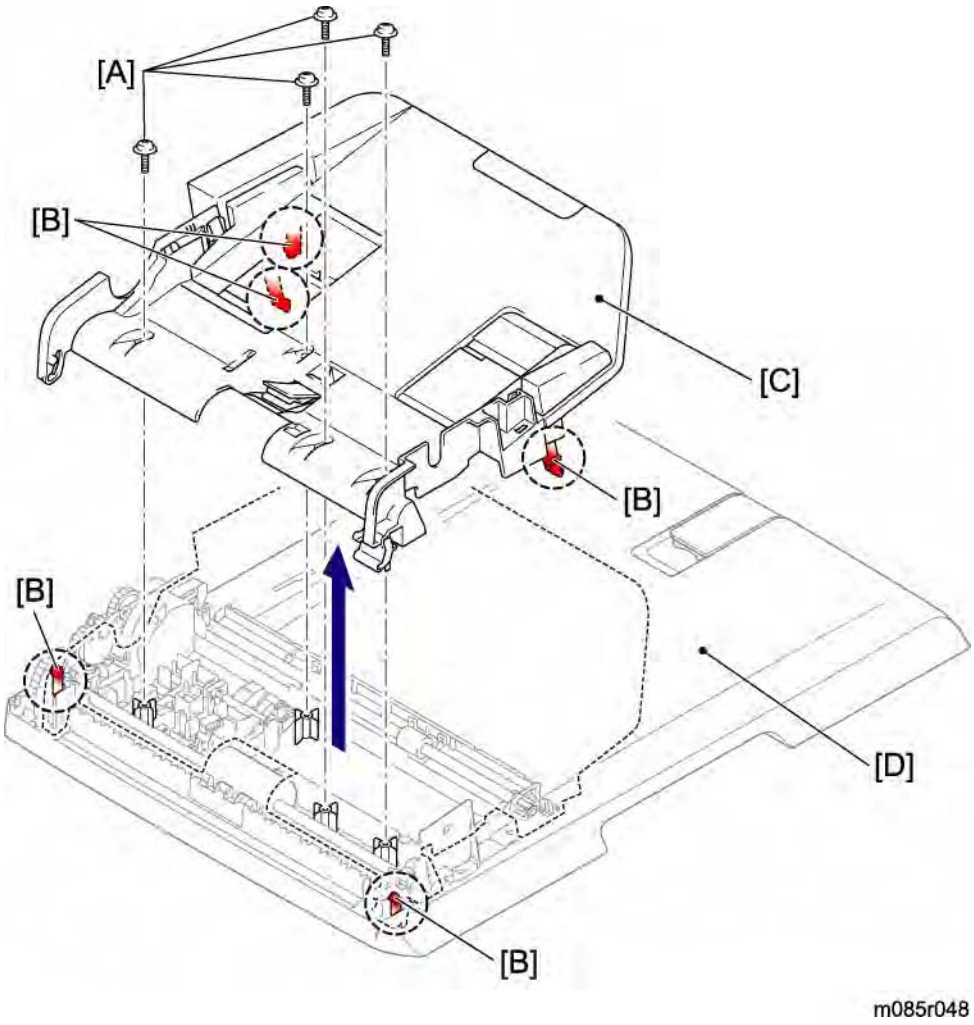
1. Release the Hook [A] to remove the Gear cover [B] from the ADF unit [C].

4.7.5 DOCUMENT SEPARATOR ROLLER SHAFT

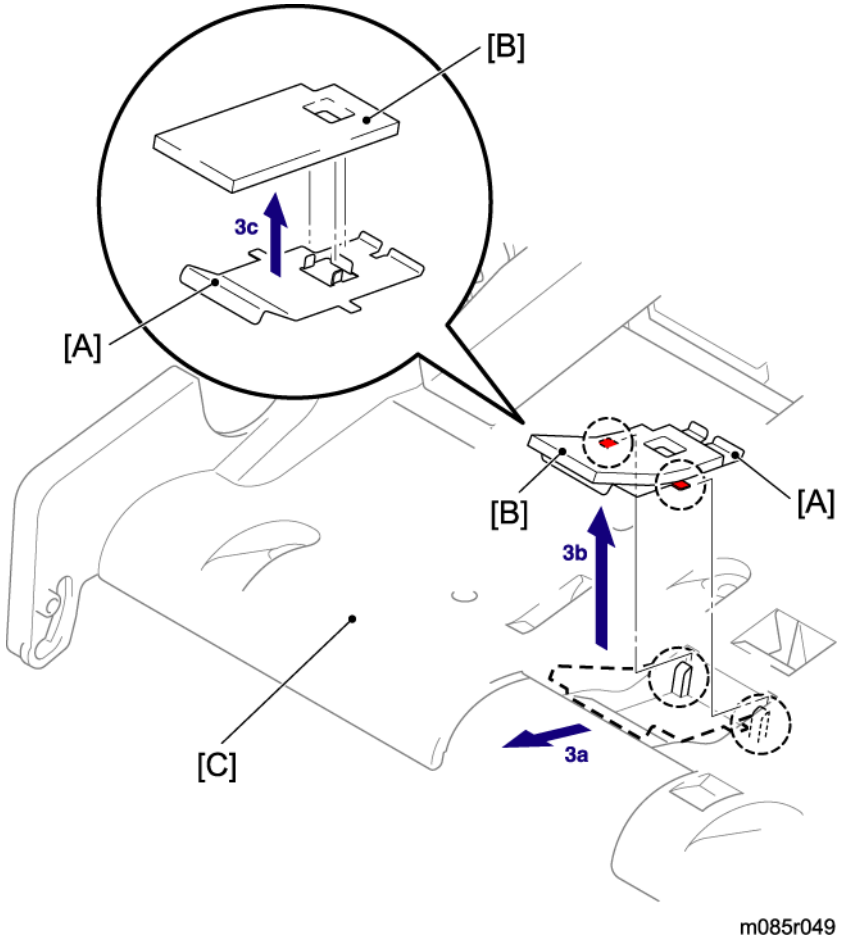


1. Remove the Separator roller shaft ASSY [A] from the ADF unit [B].
2. Remove the Separator roller bushing [C] from the Separator roller shaft ASSY [A].

4.7.6 UPPER DOCUMENT CHUTE ASSY

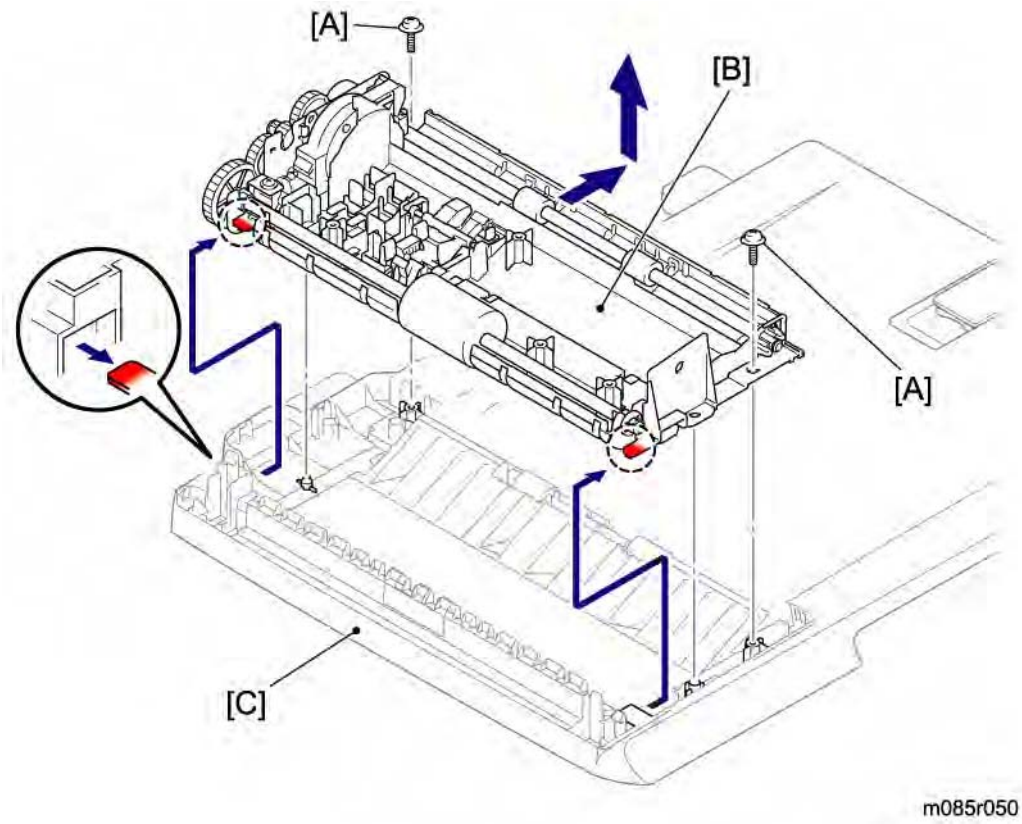


1. Remove the four Taptite cup B M3x10 screws [A].
2. Release the Hook [B] to remove the Upper document chute ASSY [C] from the ADF unit [D].



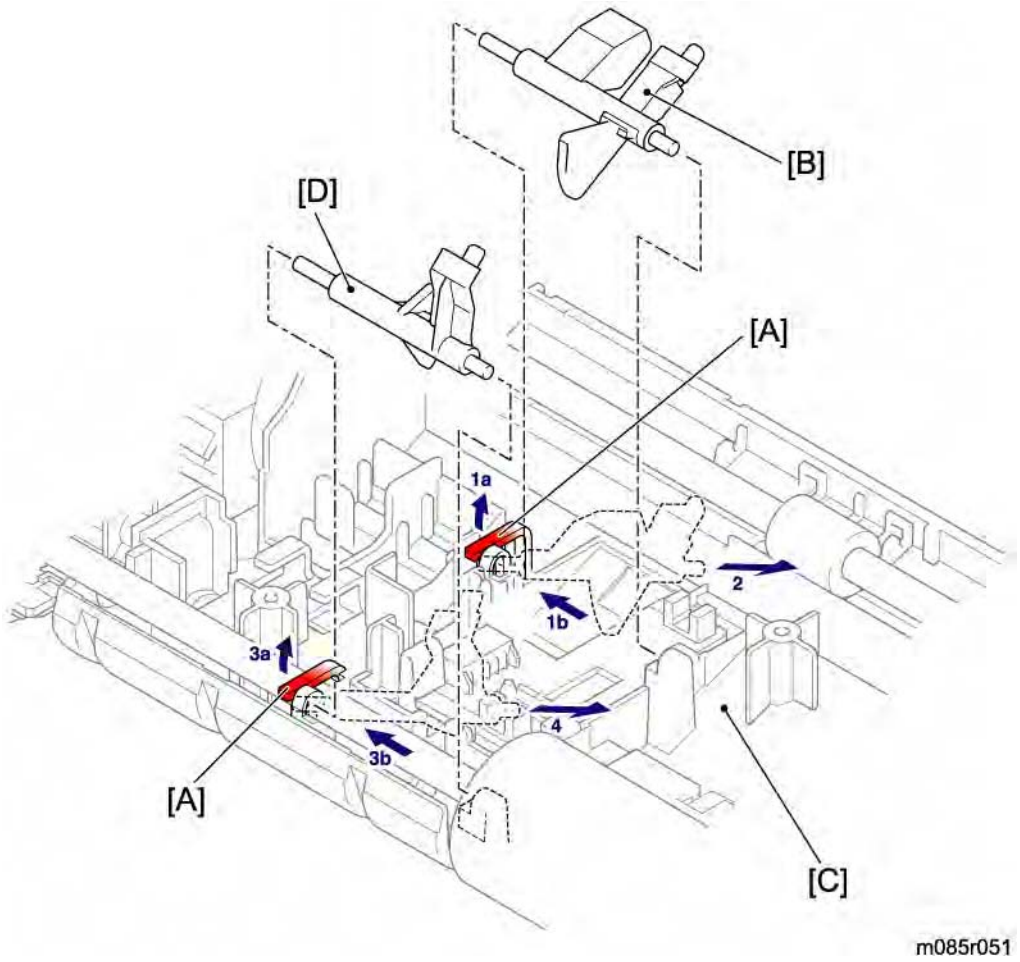
3. Release the Hook to remove the ADF plate spring [A] and the Separation rubber ASSY [B] from the Upper document chute ASSY [C].

4.7.7 LOWER DOCUMENT CHUTE ASSY

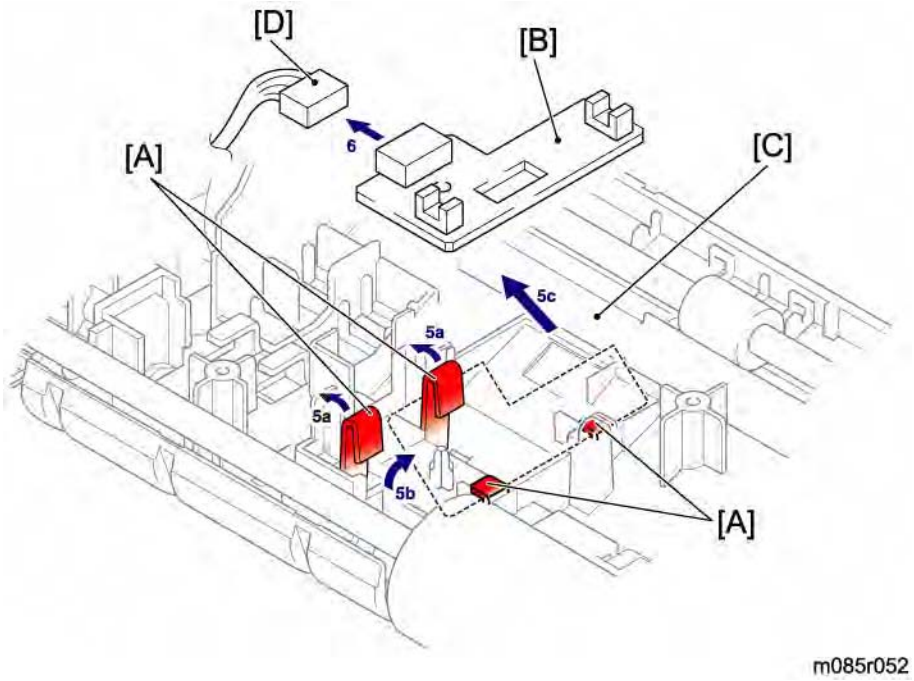


1. Remove the two Taptite cup B M3x10 screws [A], and then remove the Lower document chute ASSY [B] from the Document cover sub ASSY [C].

4.7.8 ADF SENSOR PCB ASSY

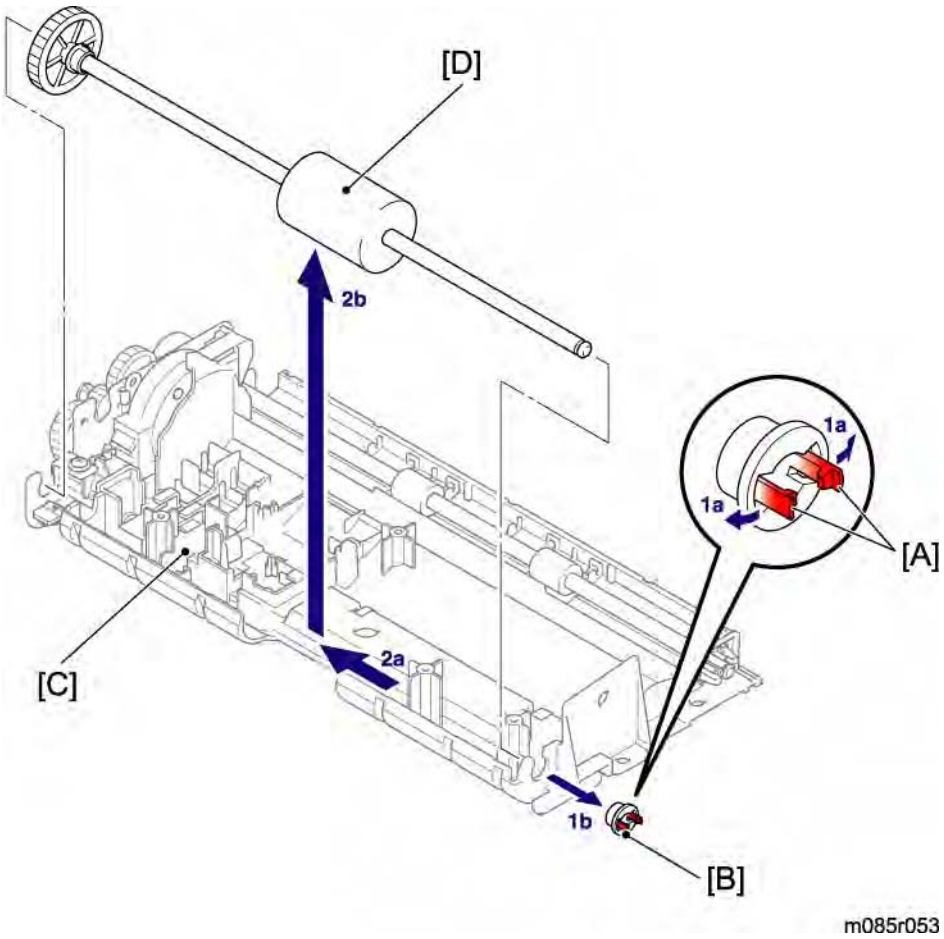


1. Pull the Hook [A] to slide the Document front actuator [B].
2. Remove the Document front actuator [B] from the Lower document chute ASSY [C].
3. Pull the Hook [A] to slide the Document rear actuator [D].
4. Remove the Document rear actuator [D] from the Lower document chute ASSY [C].



5. Release the Hook [A] to remove the ADF sensor PCB ASSY [B] from the Lower document chute ASSY [C].
6. Disconnect the Connector [D] from the ADF sensor PCB ASSY [B].

4.7.9 LF ROLLER ASSY

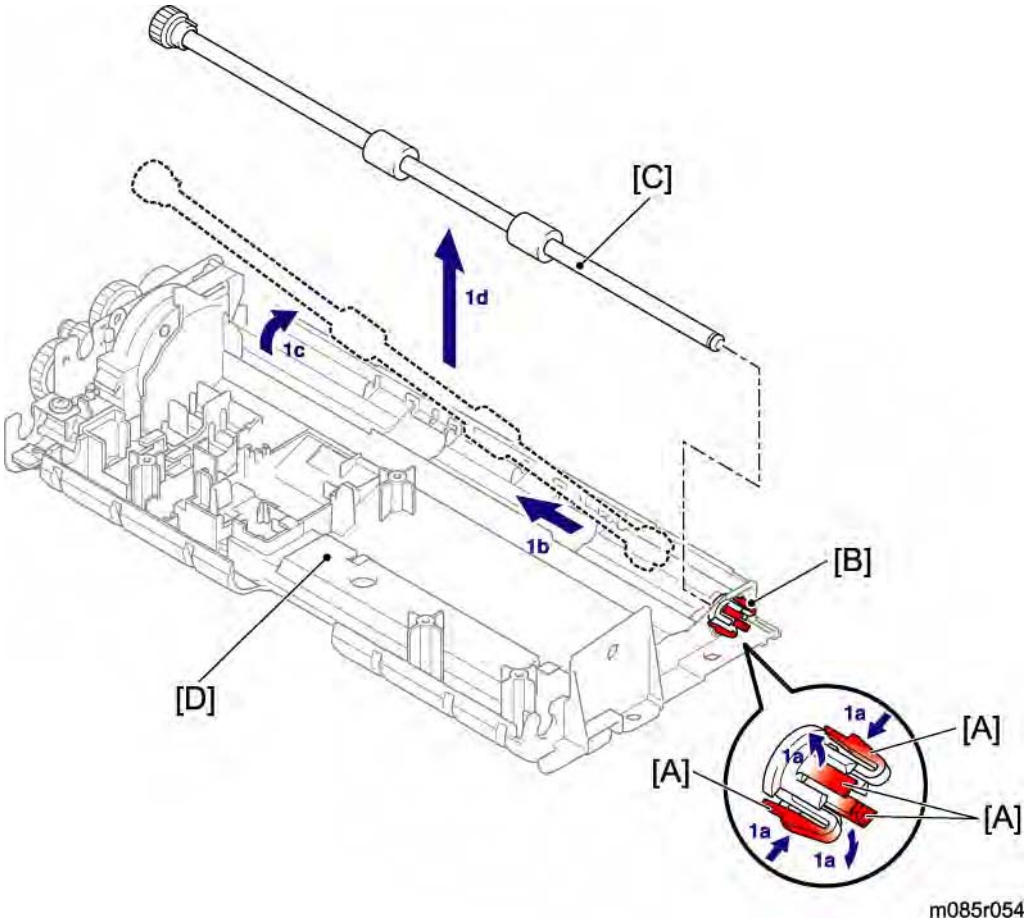


1. Release the Hook [A] to remove the LF roller bushing [B] from the Lower document chute ASSY [C].
2. Remove the LF roller ASSY [D] from the Lower document chute ASSY [C].

⚠CAUTION

- Be careful not to get grease on the roller.

4.7.10 EJECTION ROLLER ASSY

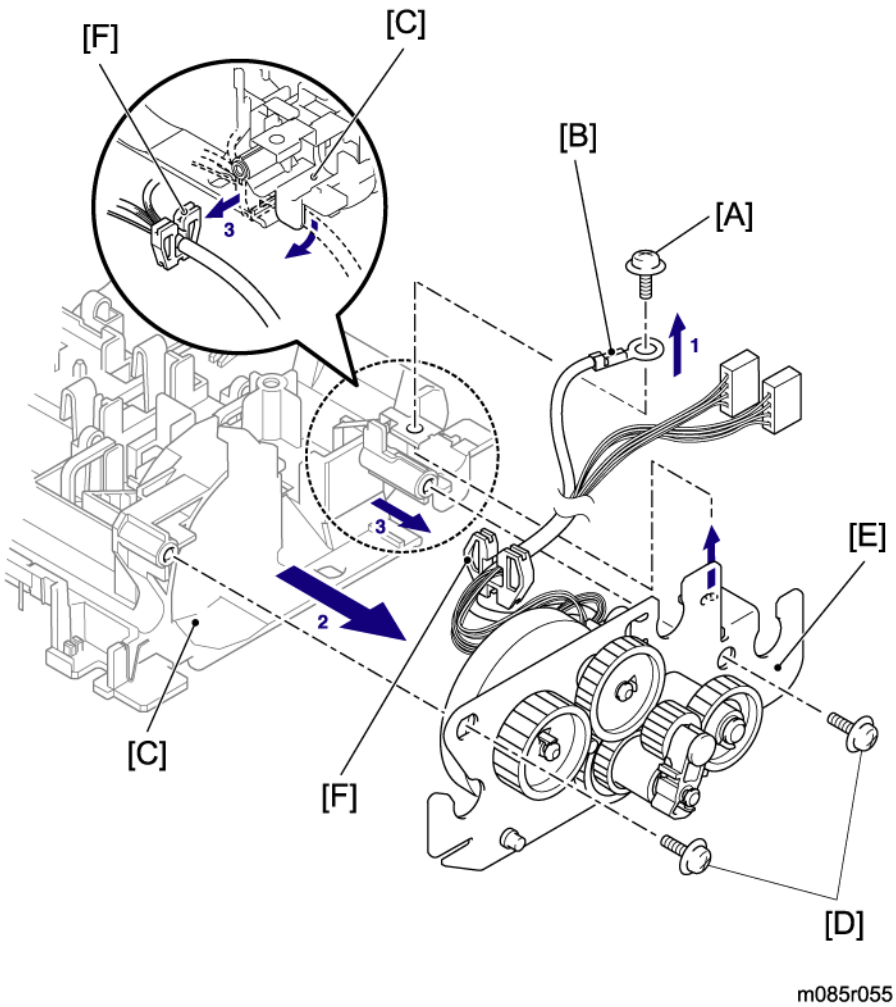


1. Release the Hook [A] of the Ejection roller bushing [B], and then slide the Ejection roller ASSY [C] to remove the Ejection roller ASSY [C] from the Lower document chute ASSY [D].

⚠CAUTION

- Be careful not to get grease on the roller.

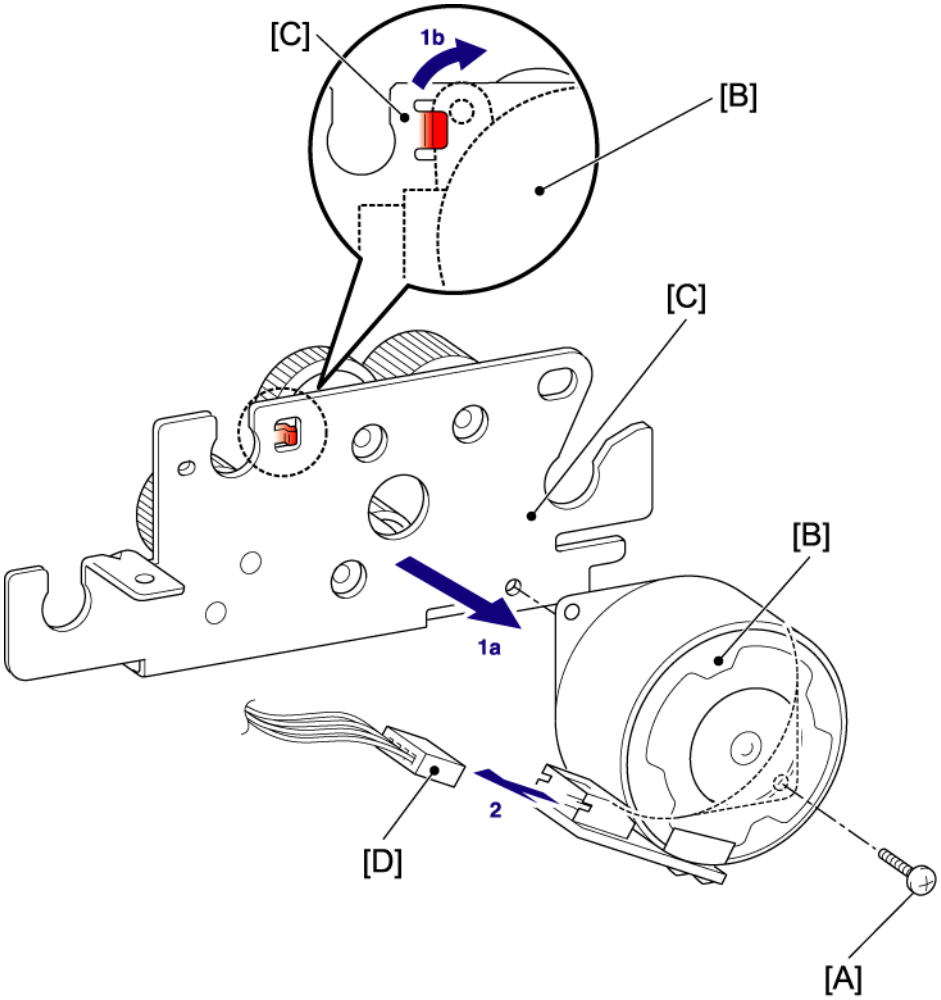
4.7.11 DRIVE FRAME ASSY



m085r055

1. Remove the Taptite cup S M3x6 SR screw [A], and then remove the FG harness [B] from the Lower document chute ASSY [C].
2. Remove the two Taptite cup B M3x10 screws [D], and then remove the Drive frame ASSY [E] from the Lower document chute ASSY [C].
3. Remove the Harness holder [F] from the Lower document chute ASSY [C].

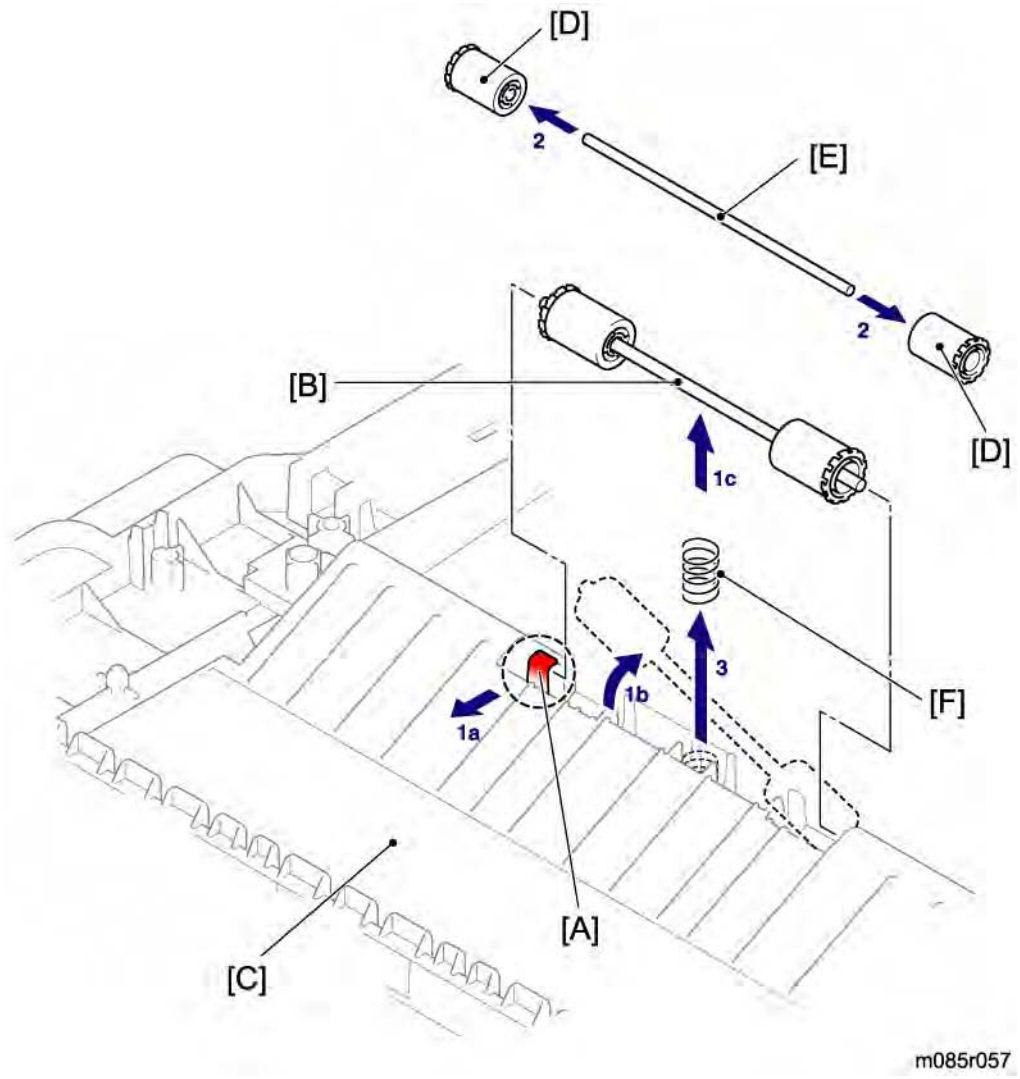
4.7.12 ADF MOTOR



m085r056

1. Remove the Taptite bind S M3x6 screw [A], and then remove the ADF motor [B] from the Drive frame ASSY [C].
2. Remove the ADF harness unit [D] from the ADF motor [B].

4.7.13 PRESSURE ROLLER ASSY

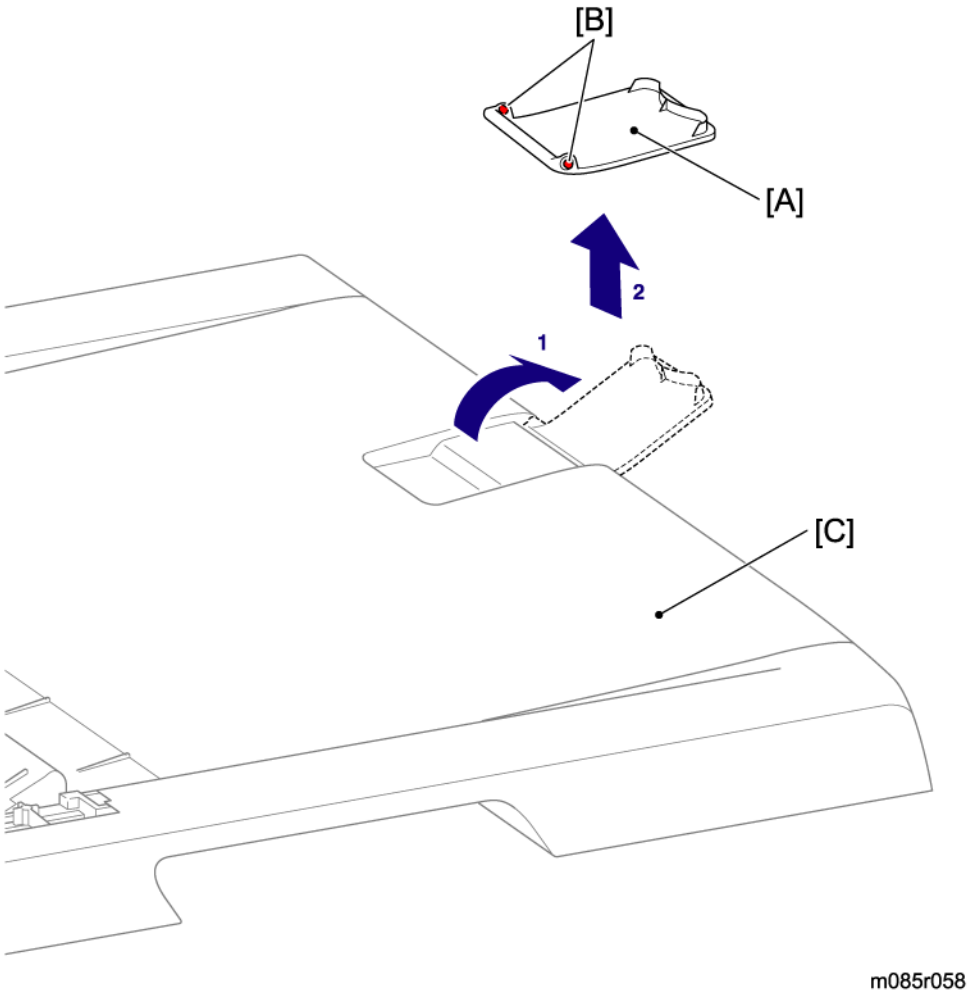


1. Release the Hook [A] to remove the Pressure roller ASSY [B] from the Document cover sub ASSY [C].
2. Remove the two Pressure rollers [D] from the Pressure roller shaft [E].
3. Remove the Pressure roller spring [F] from the Document cover sub ASSY [C].

⚠CAUTION

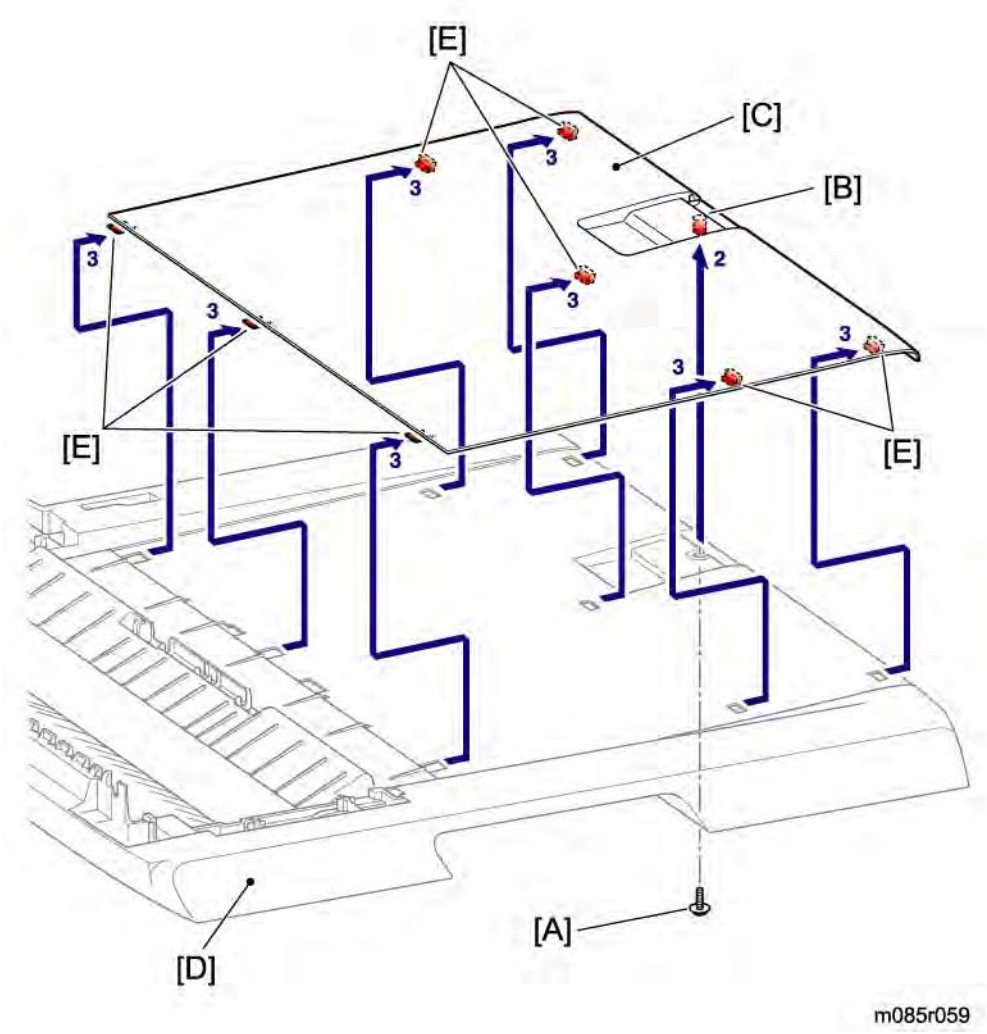
- Be careful not to get grease on the roller.

4.7.14 DOCUMENT STOPPER



1. Open the Document stopper [A].
2. Release the Boss [B] to remove the Document stopper [A] from the Document dress cover [C].

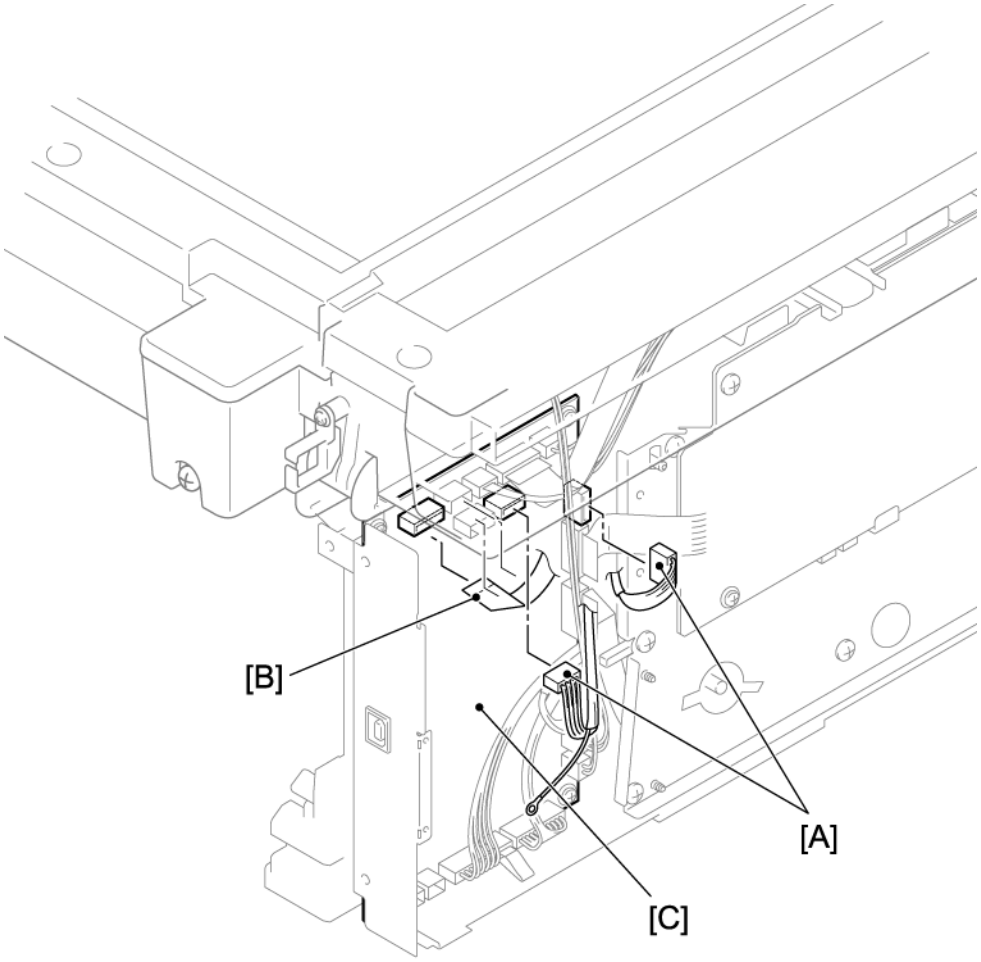
4.7.15 DOCUMENT DRESS COVER



1. Remove the Taptite cup B M3x8 [A].
2. Release the Boss [B] of the Document dress cover [C] from the Document cover sub ASSY [D].
3. Release the Hook [E] to remove the Document dress cover [C] from the Document cover sub ASSY [D].

4.8 SCANNER DISASSEMBLE PROCEDURE

4.8.1 DOCUMENT SCANNER UNIT

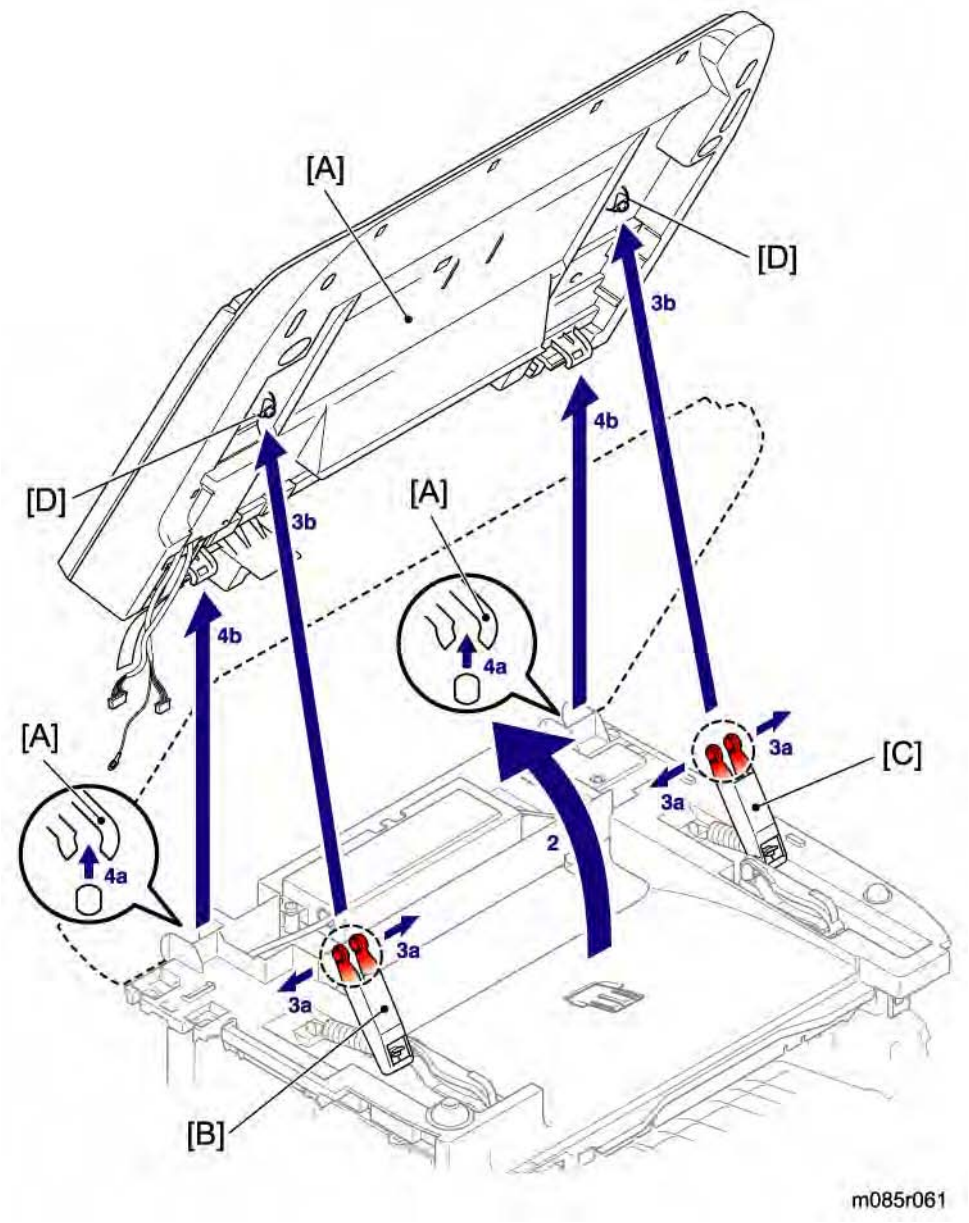


m085r060

1. Disconnect the two connectors [A] and FFC [B] from the Main PCB ASSY [C].

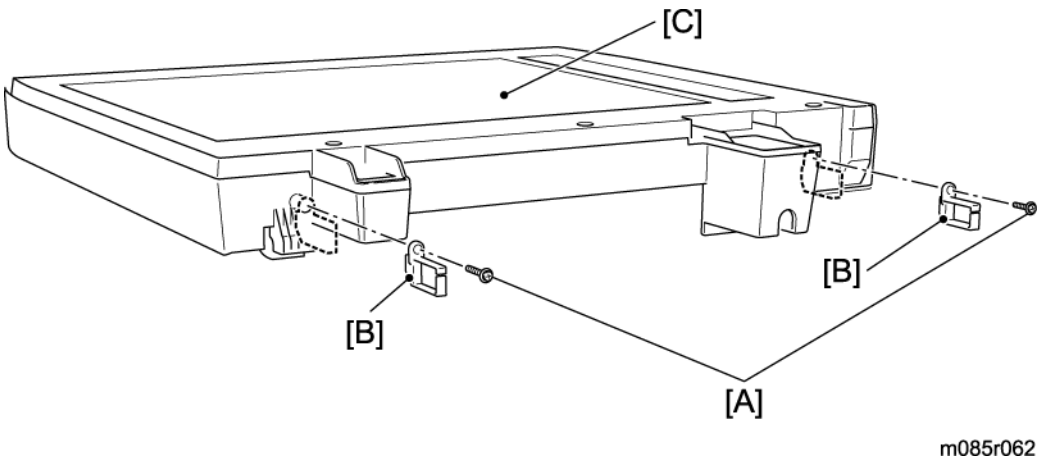
Note

- After disconnecting the flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting the flat cable(s), do not insert it at an angle. After insertion, check that the cable is not at an angle.



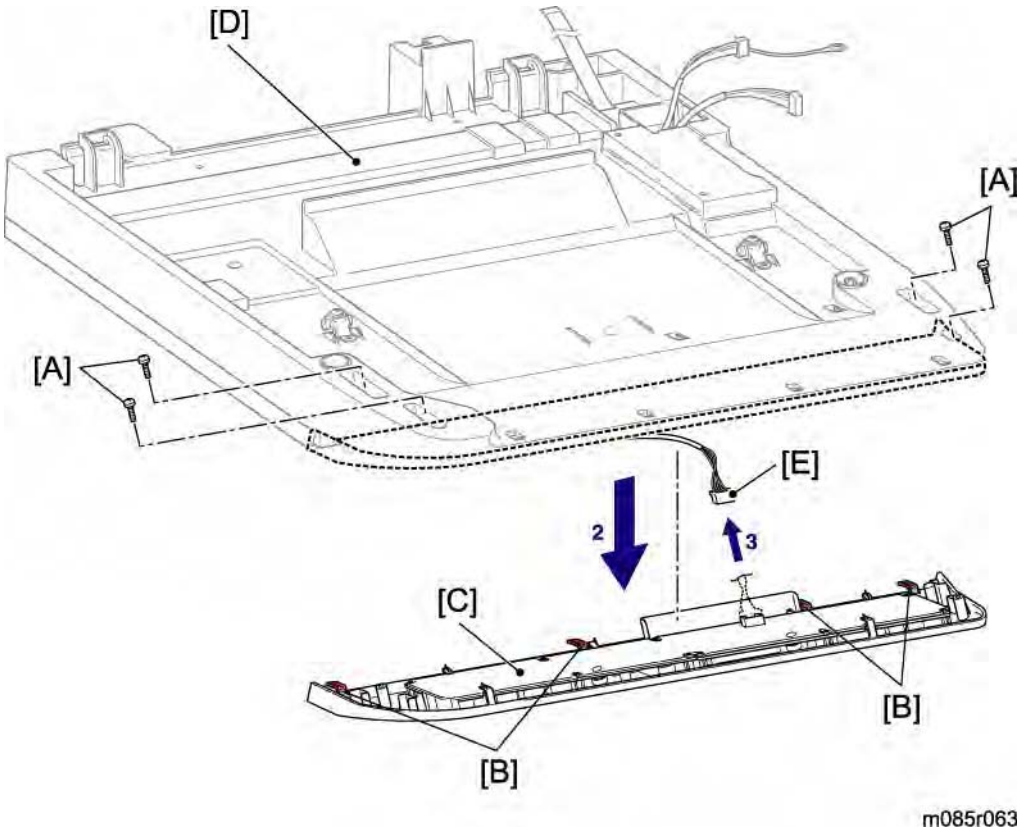
2. Open the Document scanner unit [A].
3. Remove the Pull arm L [B] and the Pull arm R [C] from the Boss [D] of the Document scanner unit [A].
4. Remove the Document scanner unit [A] from the Main body.

4.8.2 CORD HOOK



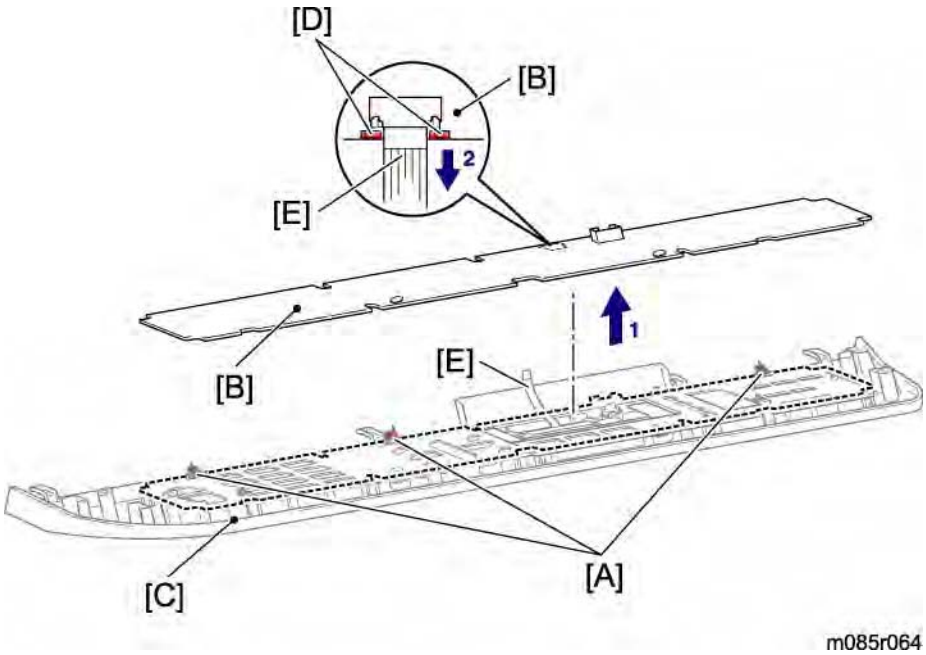
1. Remove the two Taptite cup B M3x8 screws [A], and then remove the two cord hooks [B] from the Document scanner unit [C].

4.8.3 PANEL UNIT



1. Remove the four Taptite cup B M3x10 screws [A].
2. Release the Hook [B] to remove the Panel unit [C] from the Document scanner unit [D].
3. Disconnect the connector [E] from the Panel PCB ASSY.

4.8.4 PANEL PCB ASSY

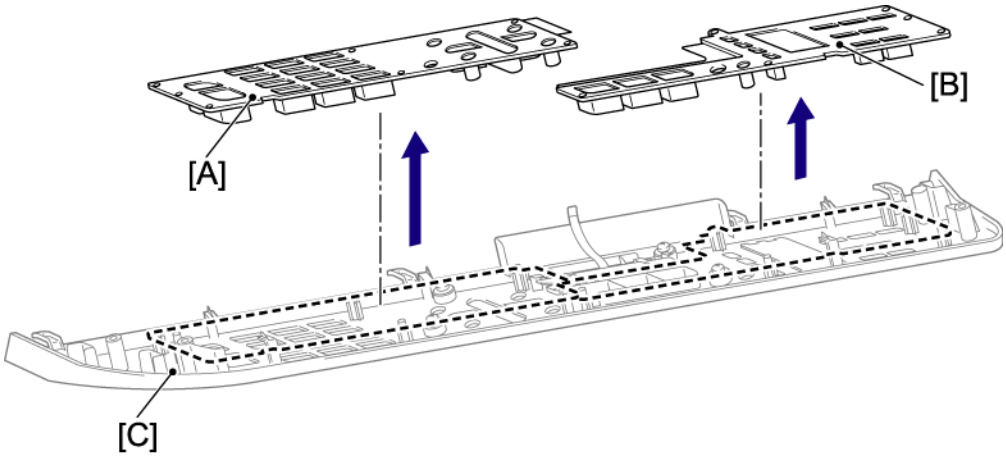


1. Release the Hook [A] to remove the Panel PCB ASSY [B] from the Panel unit [C].
2. Release the Lock [D] to remove the FFC [E] from the Panel PCB ASSY [B].

Note

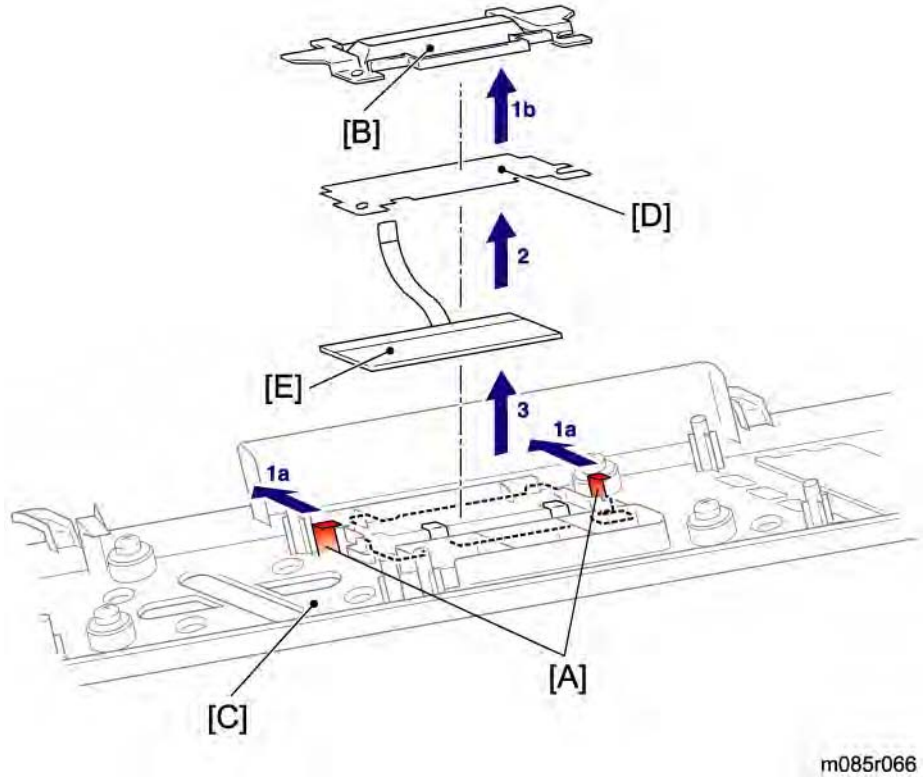
- After disconnecting the flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting the flat cable(s), do not insert it at an angle. After insertion, check that the cable is not at an angle.

4.8.5 RUBBER KEYS L/R



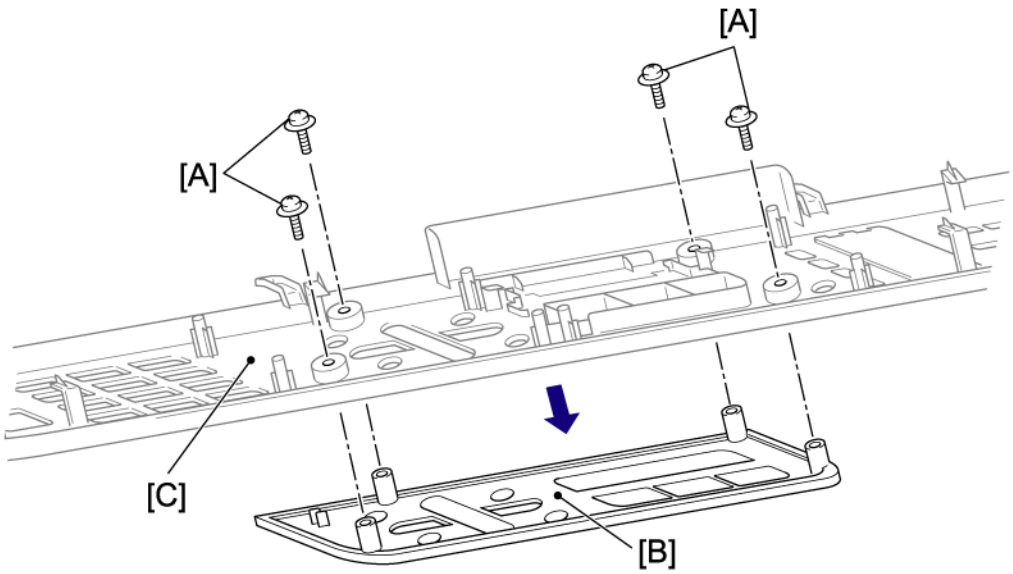
1. Remove the Rubber keys R [A] and the Rubber keys L [B] from the Panel unit [C].

4.8.6 LCD



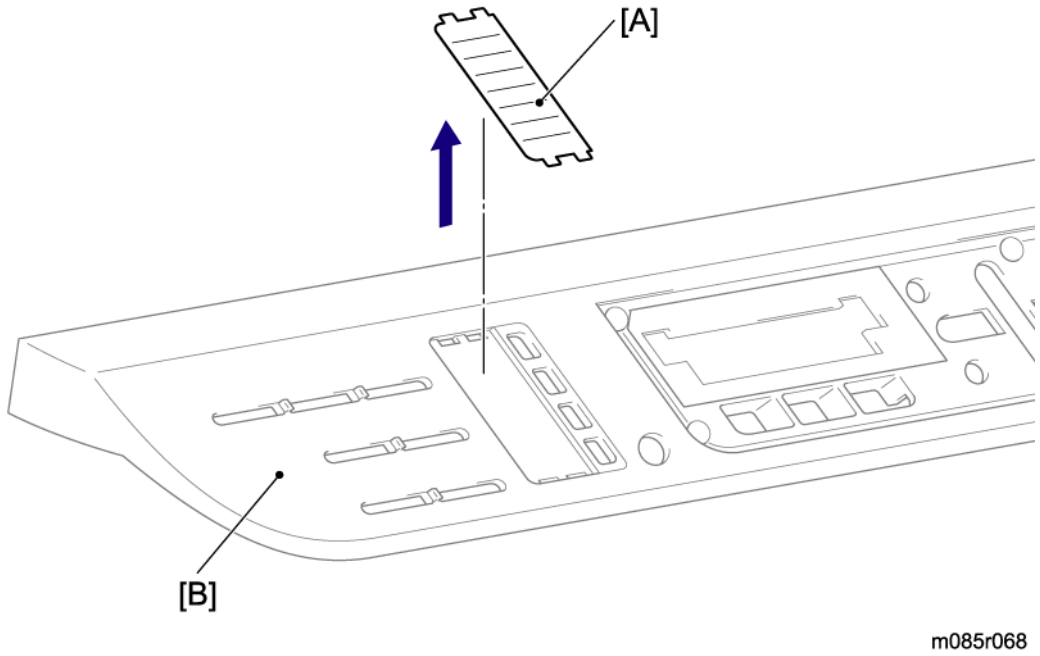
1. Release the Hook [A] to remove the Back light guide [B] from the Panel unit [C].
2. Remove the Diffusion film [D] from the Panel unit [C].
3. Remove the LCD [E] from the Panel unit [C].

4.8.7 PANEL DRESS COVER



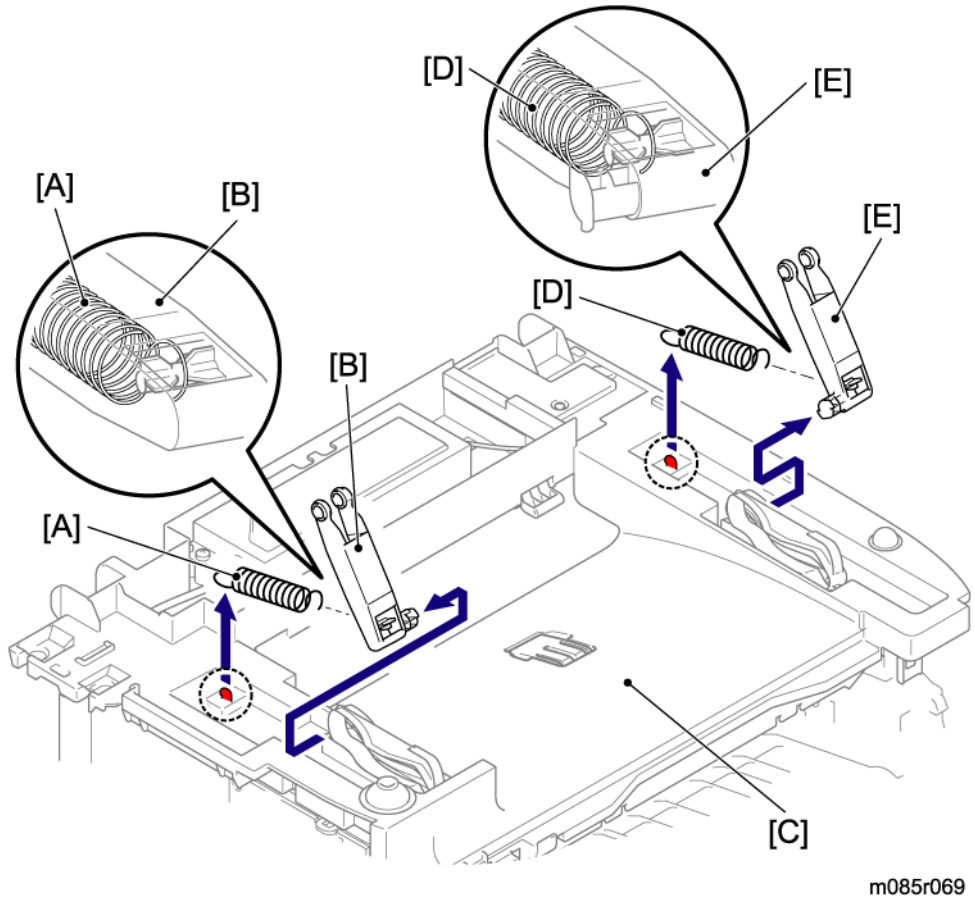
1. Remove the four Taptite cup B M3x8 screws [A], and then remove the Panel dress cover [B] from the Panel unit [C].

4.8.8 ADDRESS LABEL



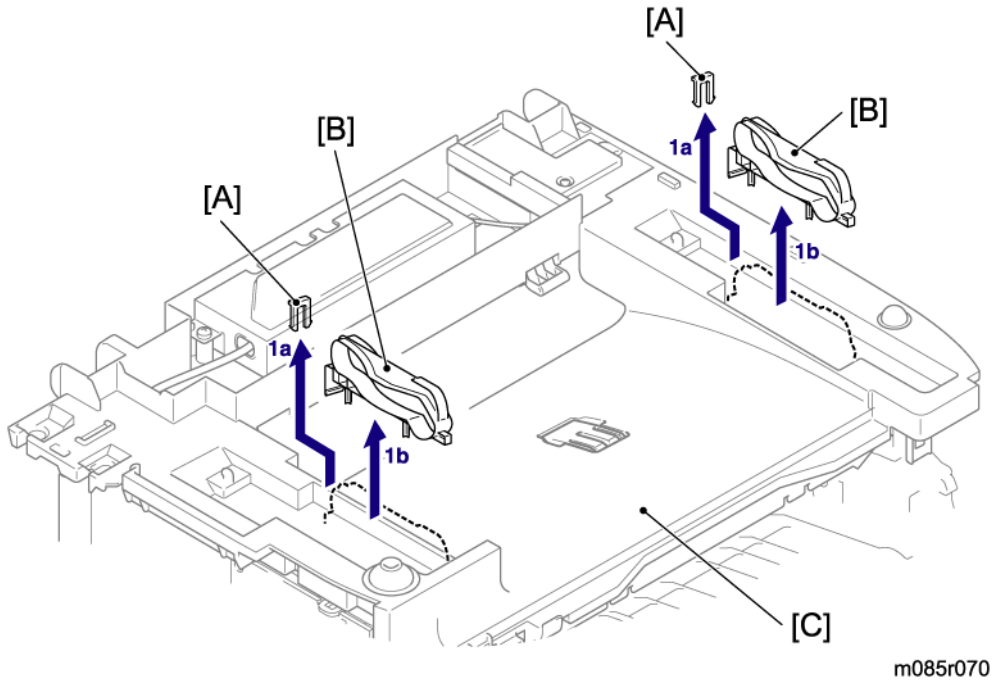
1. Remove the Address label [A] from the Panel unit [B].

4.8.9 PULL ARM L/R



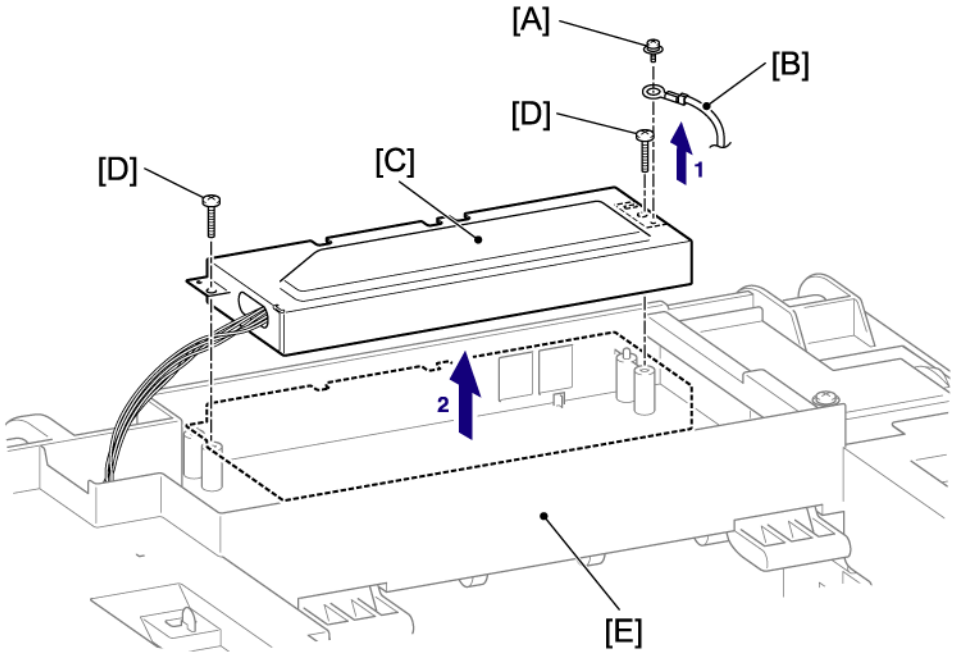
1. Remove the Pull arm spring ADF L [A] and the Pull arm L [B] from the Joint cover [C].
2. Remove the Pull arm spring ADF R [D] and the Pull arm R [E] from the Joint cover [C].

4.8.10 PULL ARM GUIDE

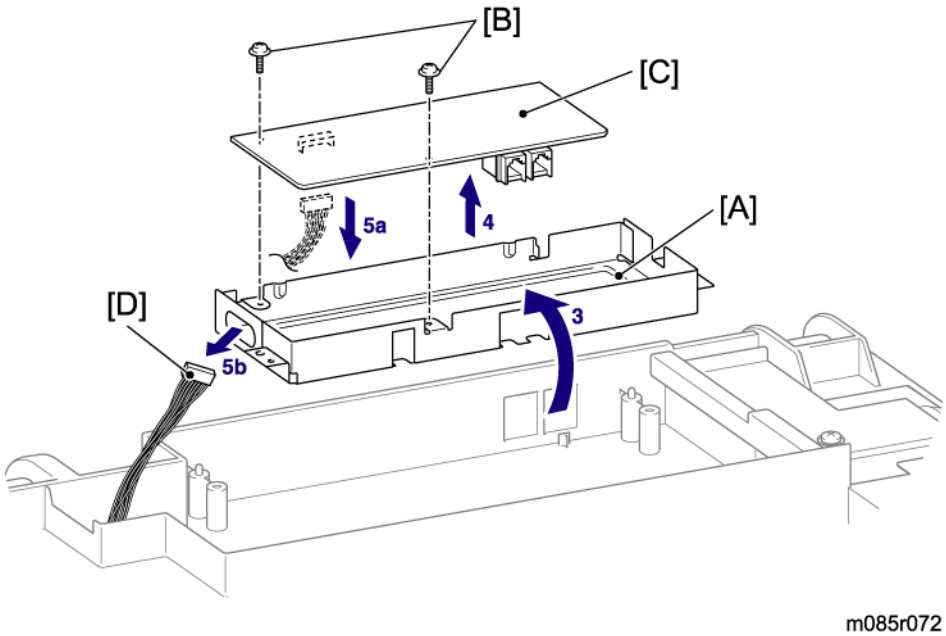


1. Remove the two Lock claws [A] to remove the two Pull arm guides [B] from the Joint cover [C].

4.8.11 NCU PCB



1. Remove the Screw pan (S/P washer) M3.5x6 screw [A], and then remove the FG harness [B] from the NCU shield [C].
2. Remove the two Taptite bind B M4x12 screws [D], and then remove the NCU shield [C] from the Joint cover [E].

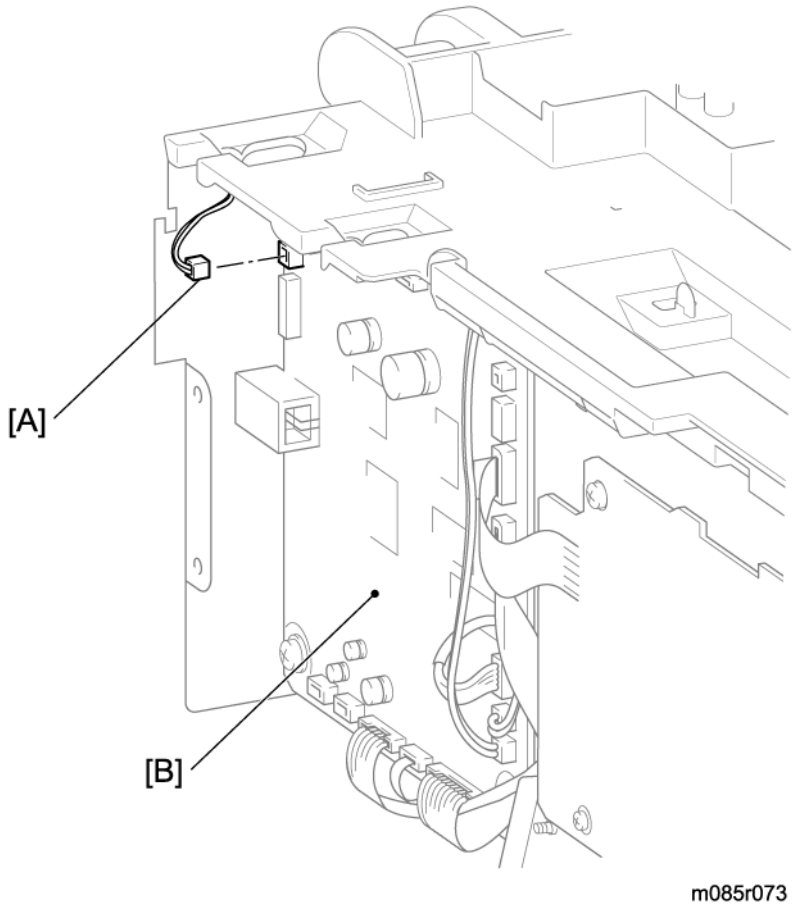


3. Turn over the NCU housing [A].
4. Remove the two Taptite cup S M3x6 SR screws [B], and then remove the NCU PCB [C]

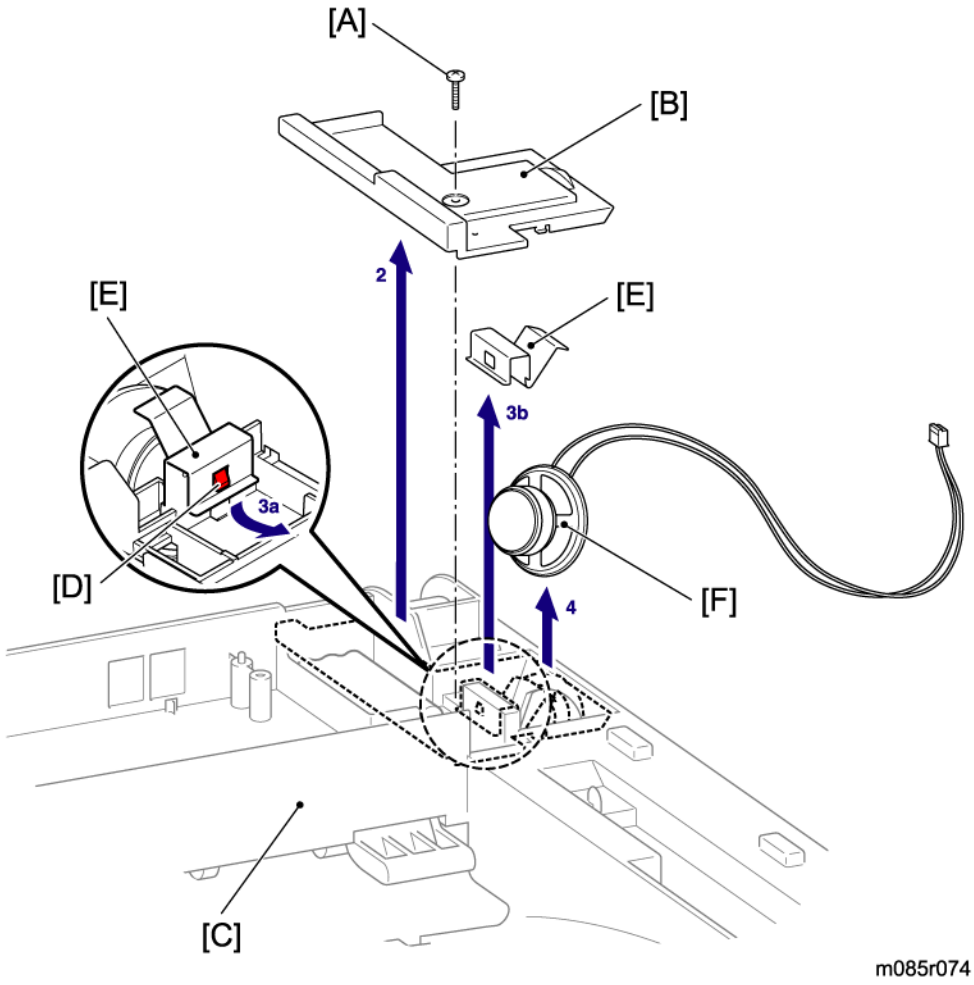
from the NCU housing [A].

5. Disconnect the Connector [D] from the NCU PCB [C], and then pull out the Connector [D] from the NCU housing [A].

4.8.12 SPEAKER UNIT

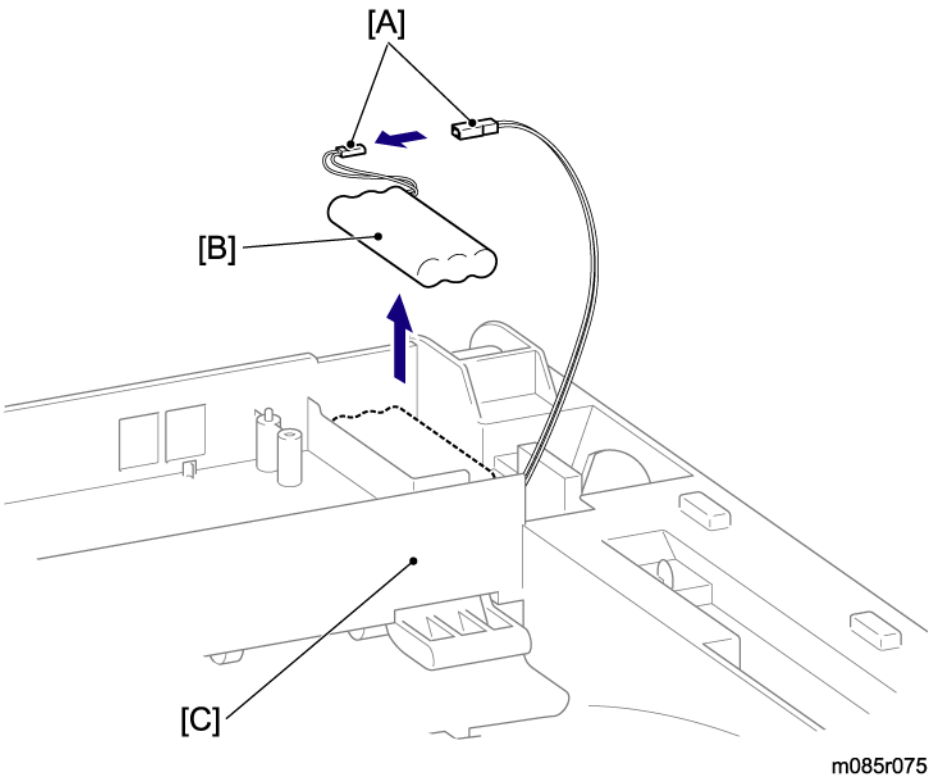


1. Disconnect the Connector [A] of the Speaker unit from the Main PCB ASSY [B].



2. Remove the Taptite bind B M4x12 screw [A], and then remove the Speaker cover [B] from the Joint cover [C].
3. Release the Hook [D] to remove the Speaker hold spring [E] from the Joint cover [C].
4. Remove the Speaker unit [F] from the Joint cover [C].

4.8.13 BATTERY ASSY



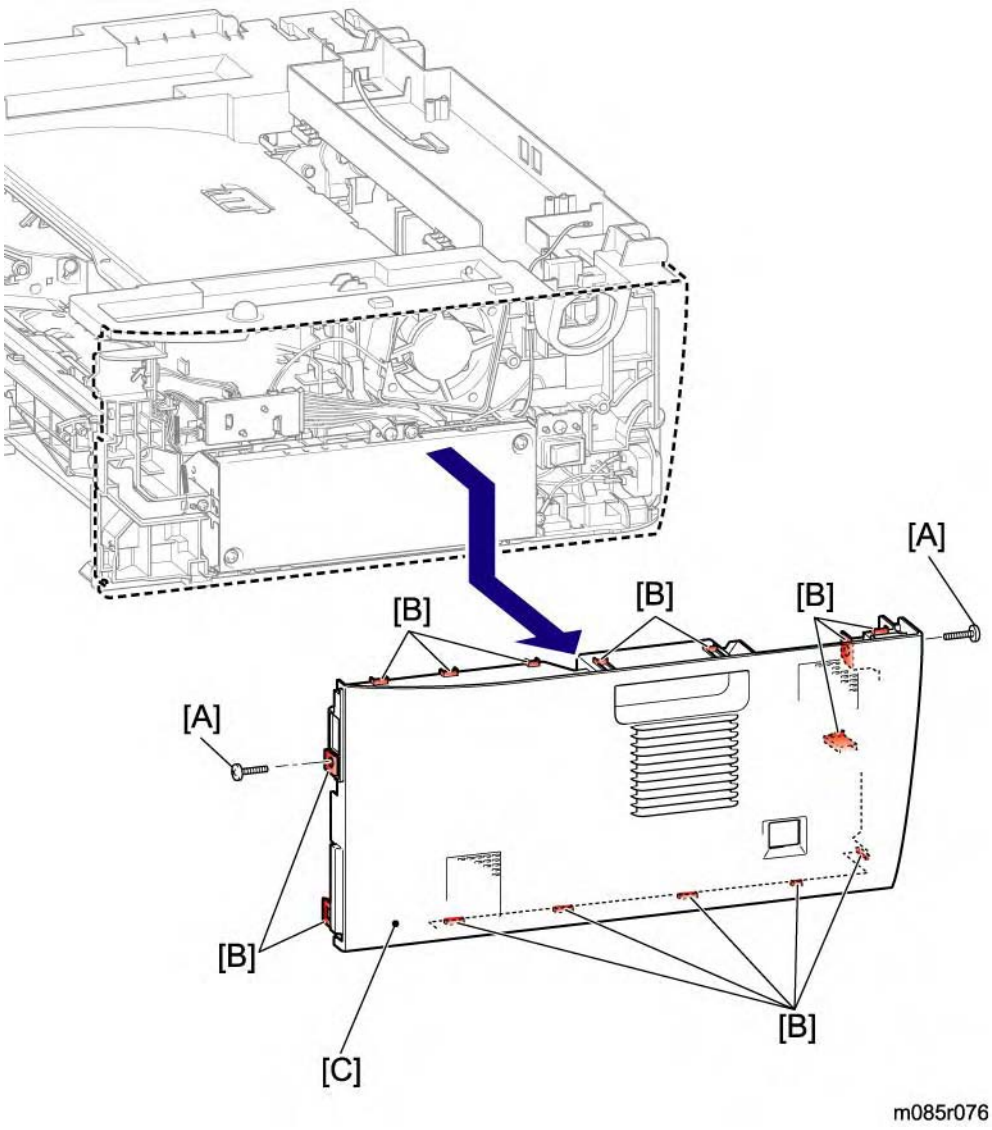
1. Disconnect the connector [A], and then remove the Battery ASSY [B] from the Joint cover [C].

CAUTION

- There is a danger of explosion if the battery is incorrectly replaced.
- Do not disassemble or recharge the battery.
- Do not dispose of the battery in fire.
- Used batteries should be disposed of according to the local regulations.
- Use a genuine spare part when you replace the battery.

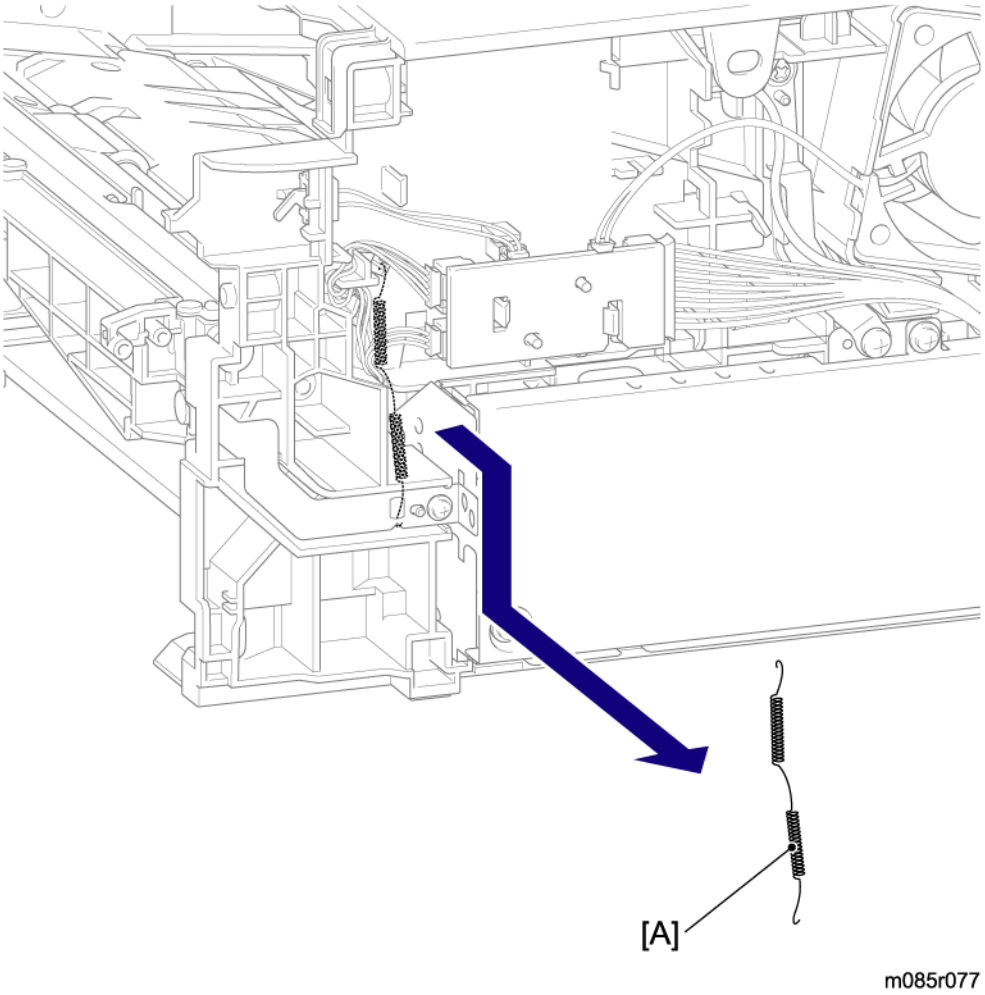
4.9 ENGINE DISASSEMBLE PROCEDURE

4.9.1 SIDE COVER R ASSY



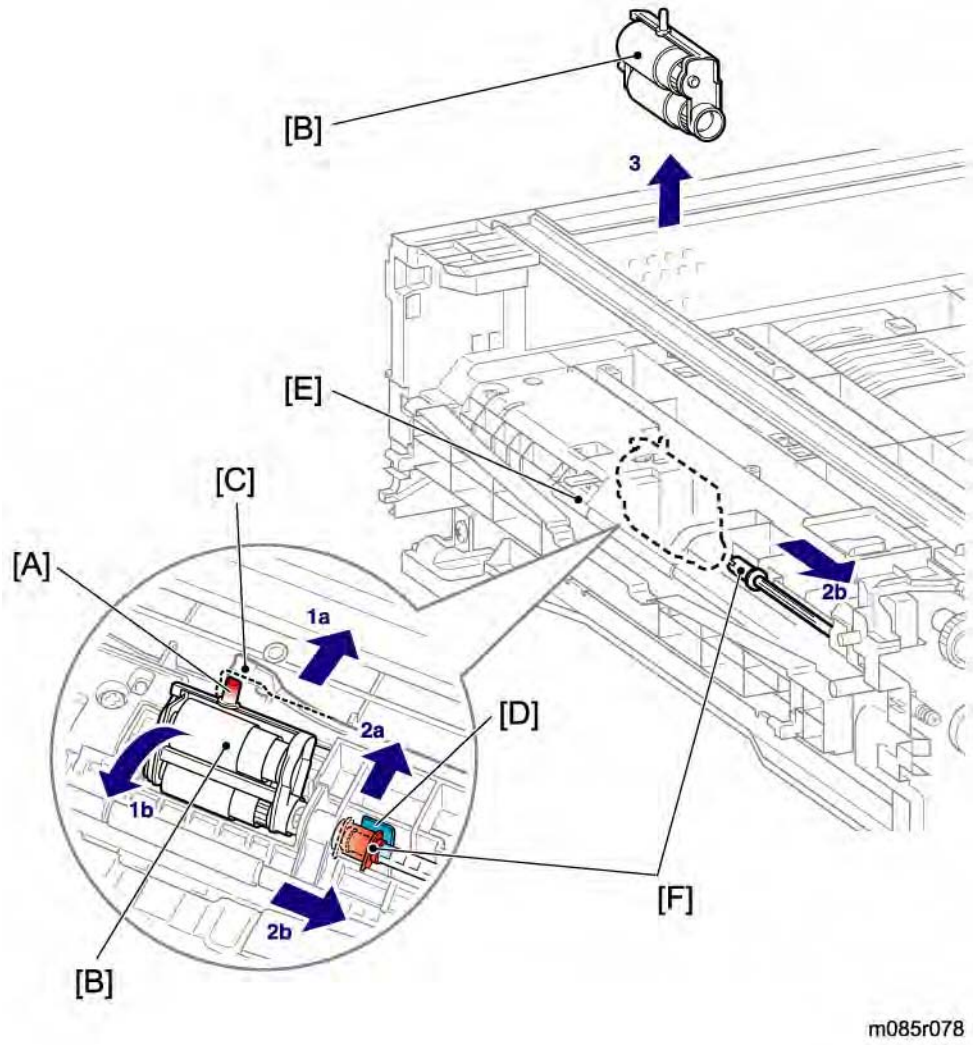
1. Remove the two Taptite bind B M4x12 screws [A].
2. Release the Hook [B] to remove the Side cover R ASSY [C] from the Main body.

4.9.2 REGISTRATION GROUNDING SPRING



1. Remove the Registration grounding spring [A] from the Main body.

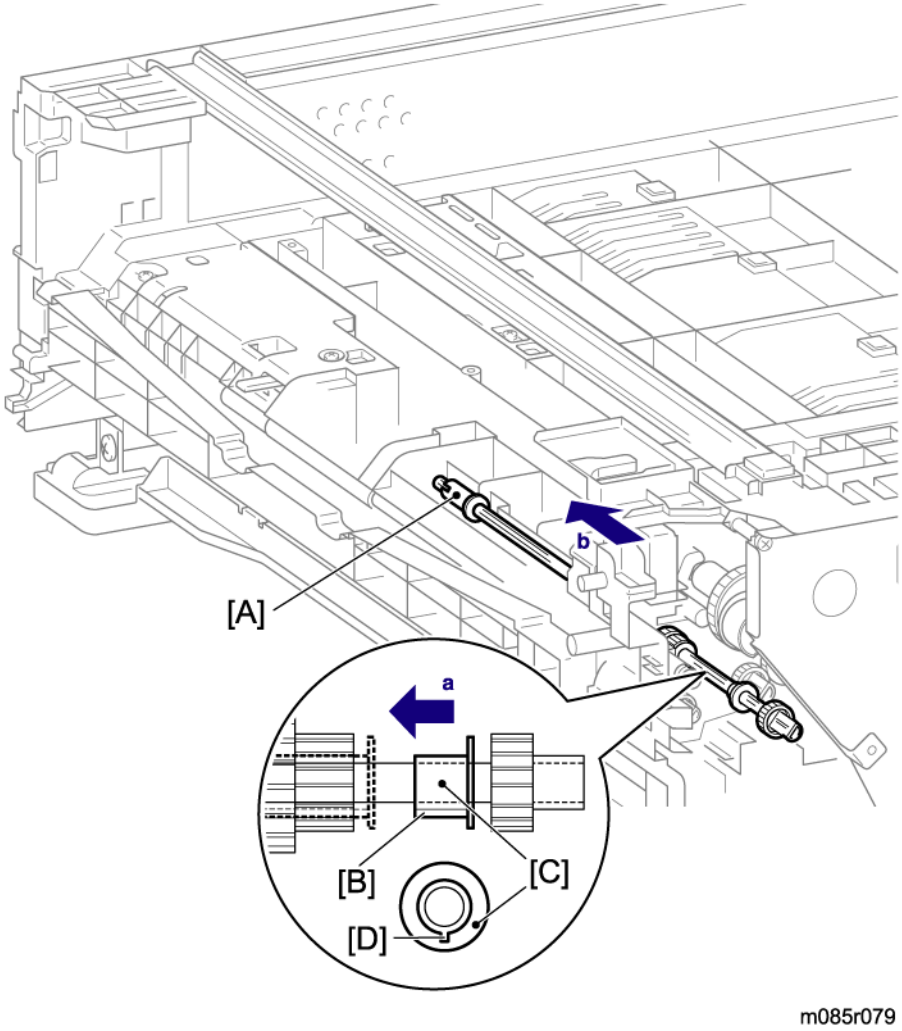
4.9.3 ROLLER HOLDER ASSY



1. Release the Boss [A] of the Roller holder ASSY [B] from the Link arm [C].
2. Press the Rib [D] of the Paper feed frame [E], then slide the Separation R shaft bush [F].
3. Remove the Roller holder ASSY [B] from the Main body.

Assembling Note:

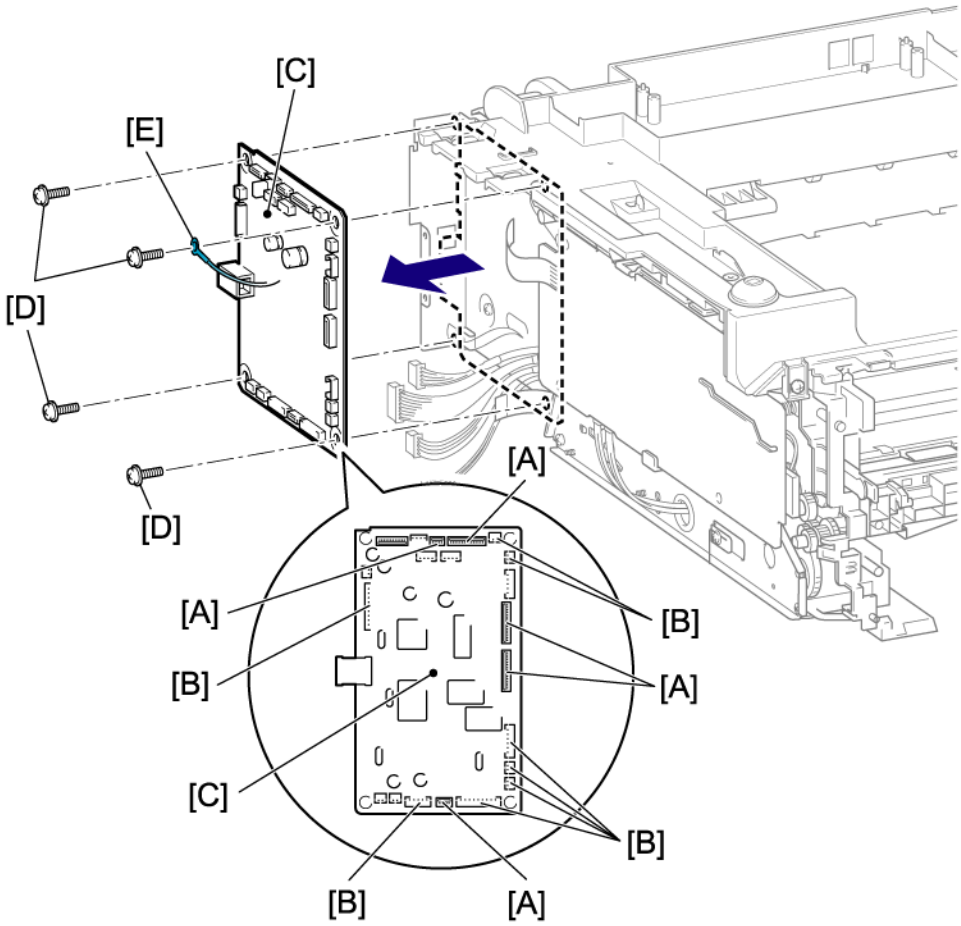
When assembling the Roller holder ASSY to the Main body, note the assembling method referring to the figure above.



Important

- When the Separation R shaft bush [A] does not slide across correctly, place the Rib [B] of the Bush 6 [C] while aligning with the Groove [D] of the Main body shaft hole from the Main frame L ASSY side.

4.9.4 MAIN PCB ASSY



m085r081

1. Disconnect the five FFCs [A] and the eight Connectors [B] from the Main PCB ASSY [C].
2. Remove the four Taptite cup S M3x6 SR screws [D], and then remove the FG harness ASSY [E] and the Main PCB ASSY [C] from the Main body.

Note

- After disconnecting the flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting the flat cable(s), do not insert it at an angle. After insertion, check that the cable is not at an angle.

Assembling Note:

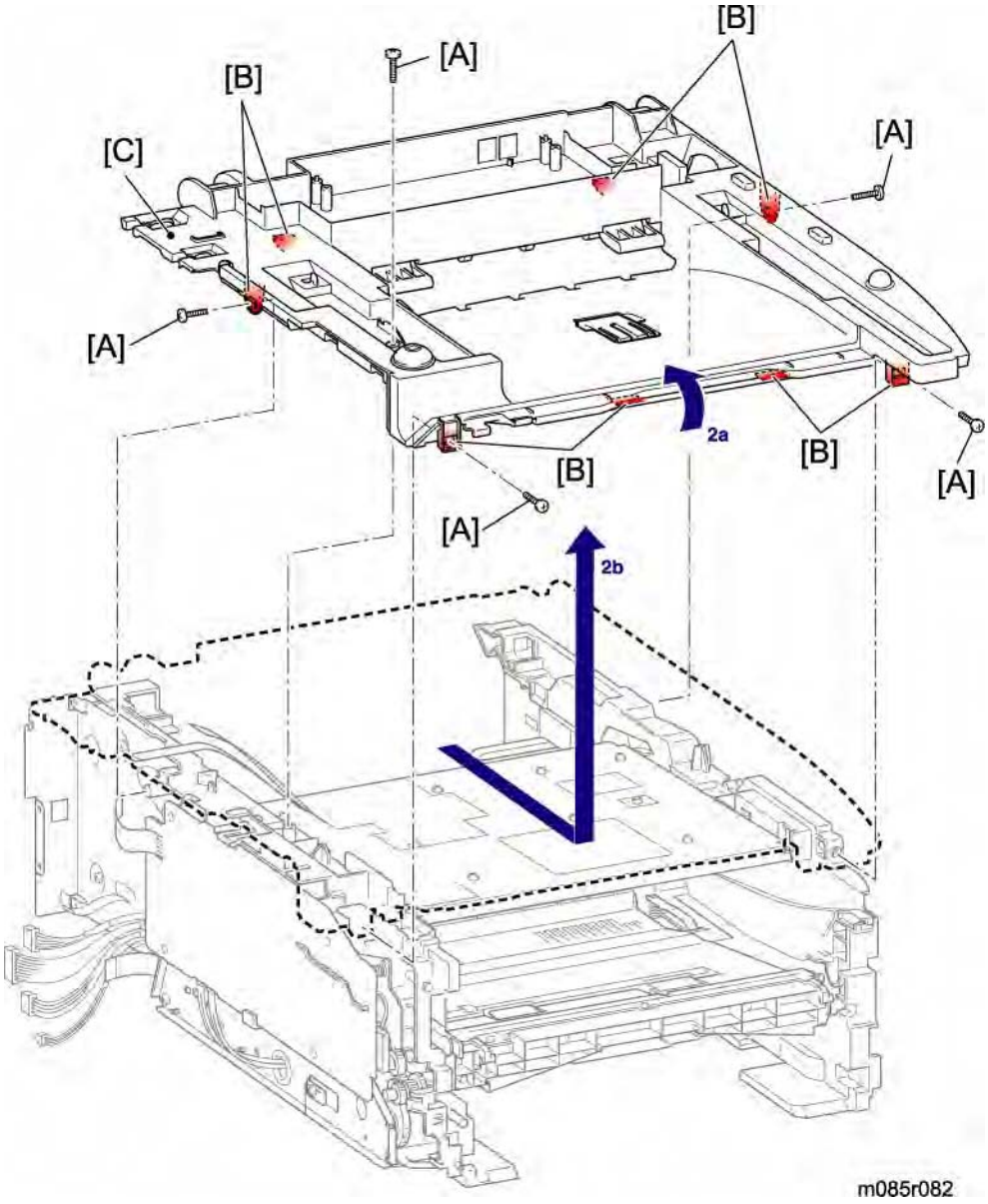
If the FG harness ASSY which comes from the Laser unit is not connected, the Laser unit may break down or not function correctly.

Replacement Main PCB Note:

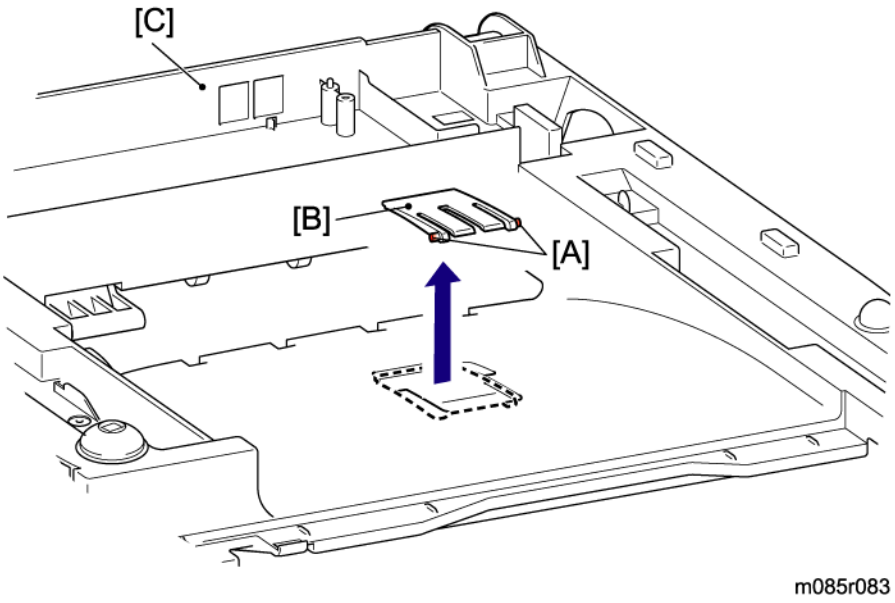
When replace the main PCB, the function of the I FAX disappears.

Contact the customer to download the I FAX again.

4.9.5 JOINT COVER ASSY / PAPER SUPPORTER

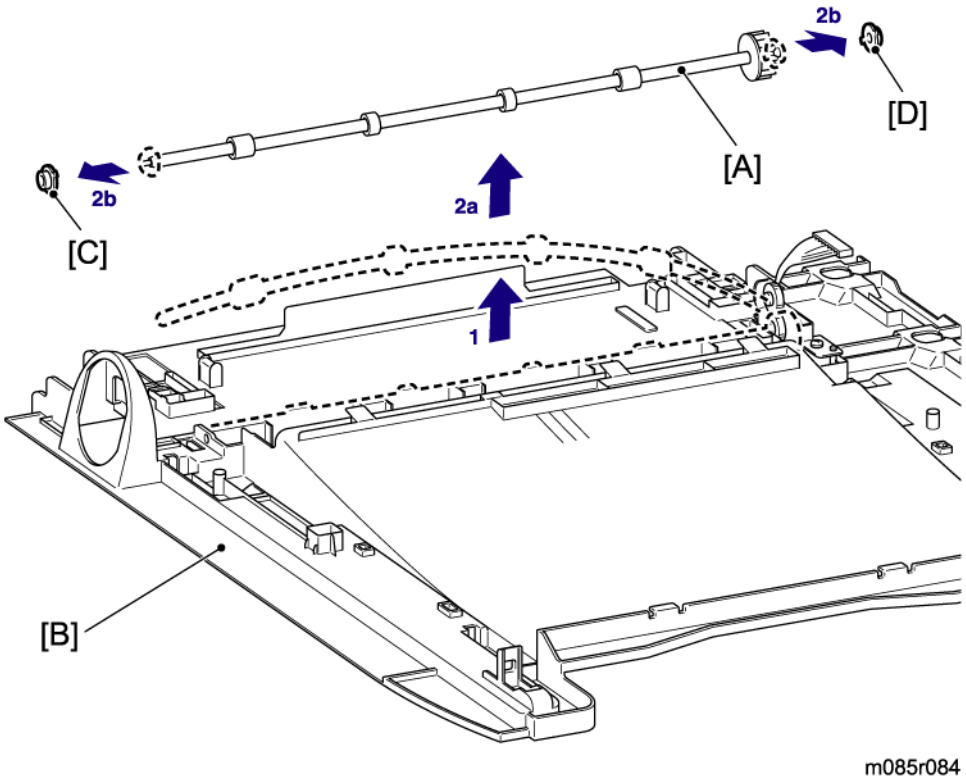


1. Remove the five Taptite bind B M4x12 screws [A].
2. Release the Hook [B] to remove the Joint cover ASSY [C] from the Main body.



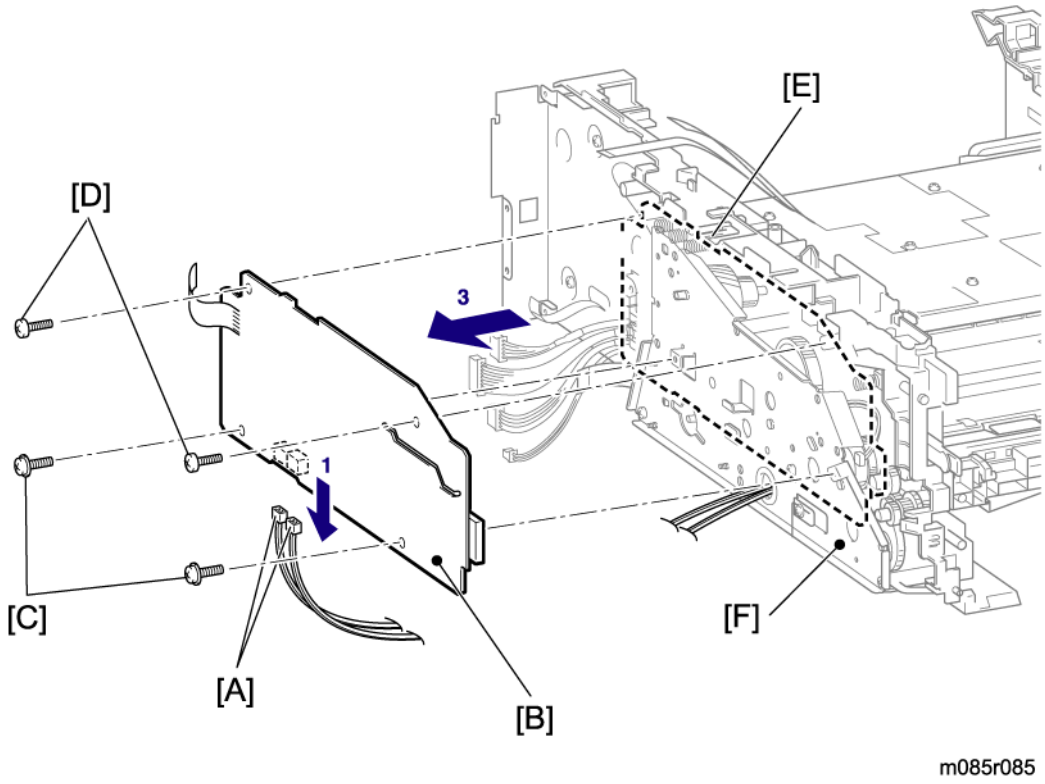
3. Release the Boss [A] to remove the Paper supporter [B] from the Joint cover ASSY [C].

4.9.6 EJECT ROLLER ASSY 2



1. Remove the Eject roller ASSY 2 [A] from the Joint cover ASSY [B].
2. Remove the Bush R [C] and the Bush L [D] from the Eject roller ASSY 2 [A].

4.9.7 HIGH-VOLTAGE PS PCB ASSY

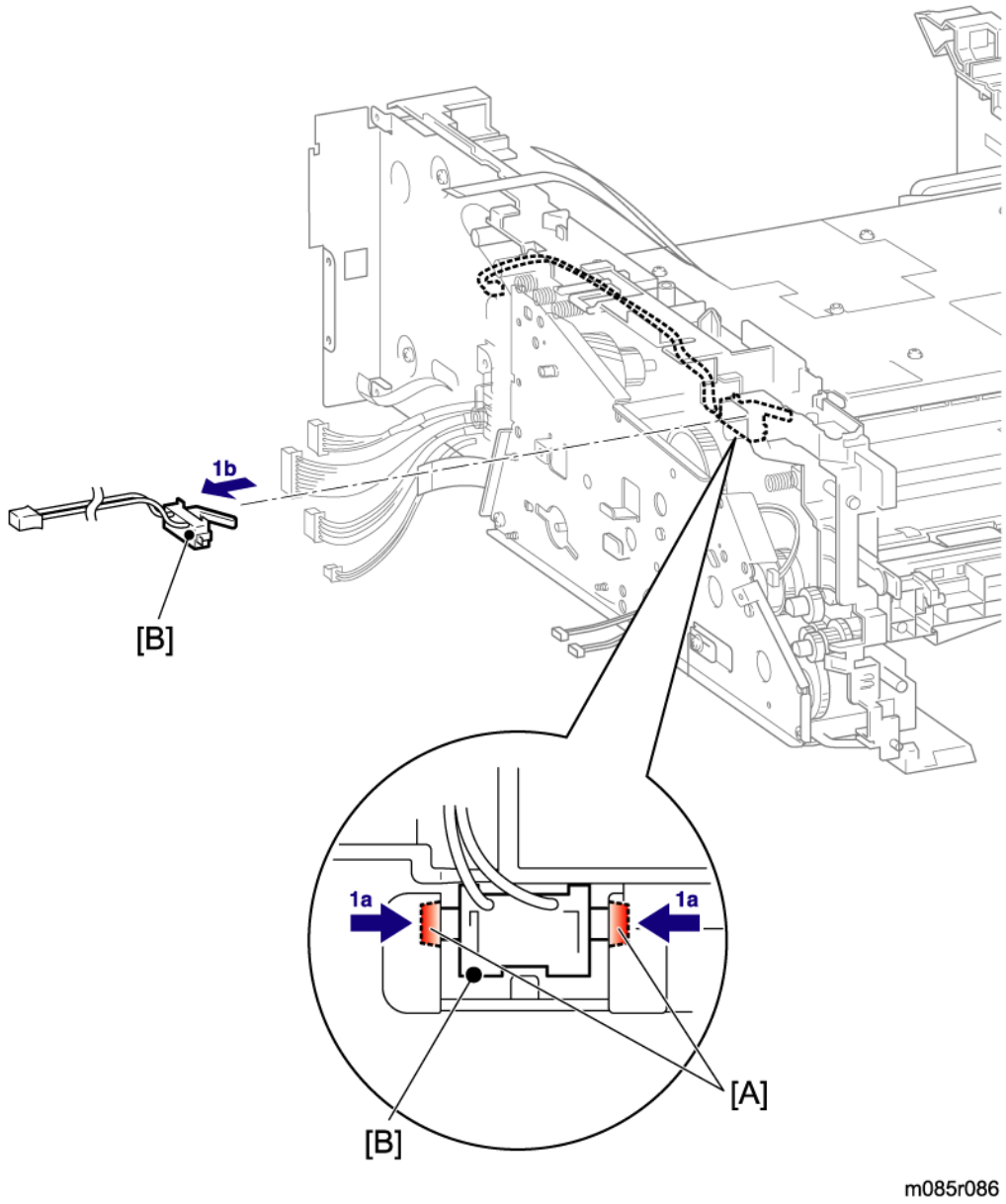


1. Disconnect the two Connectors [A] from the High-voltage PS PCB ASSY [B].
2. Remove the two Taptite cup S M3x6 SR screws [C] and the two Taptite bind B M4x12 screws [D].
3. Release the Hook [E] to remove the High-voltage PS PCB ASSY [B] from the Drive sub ASSY [F].

Note

- There are procedures for disassembling Main frame L ASSY after this procedure. (p.4-106 "Main Frame L Assy")

4.9.8 NEW TONER SENSOR HARNESS ASSY

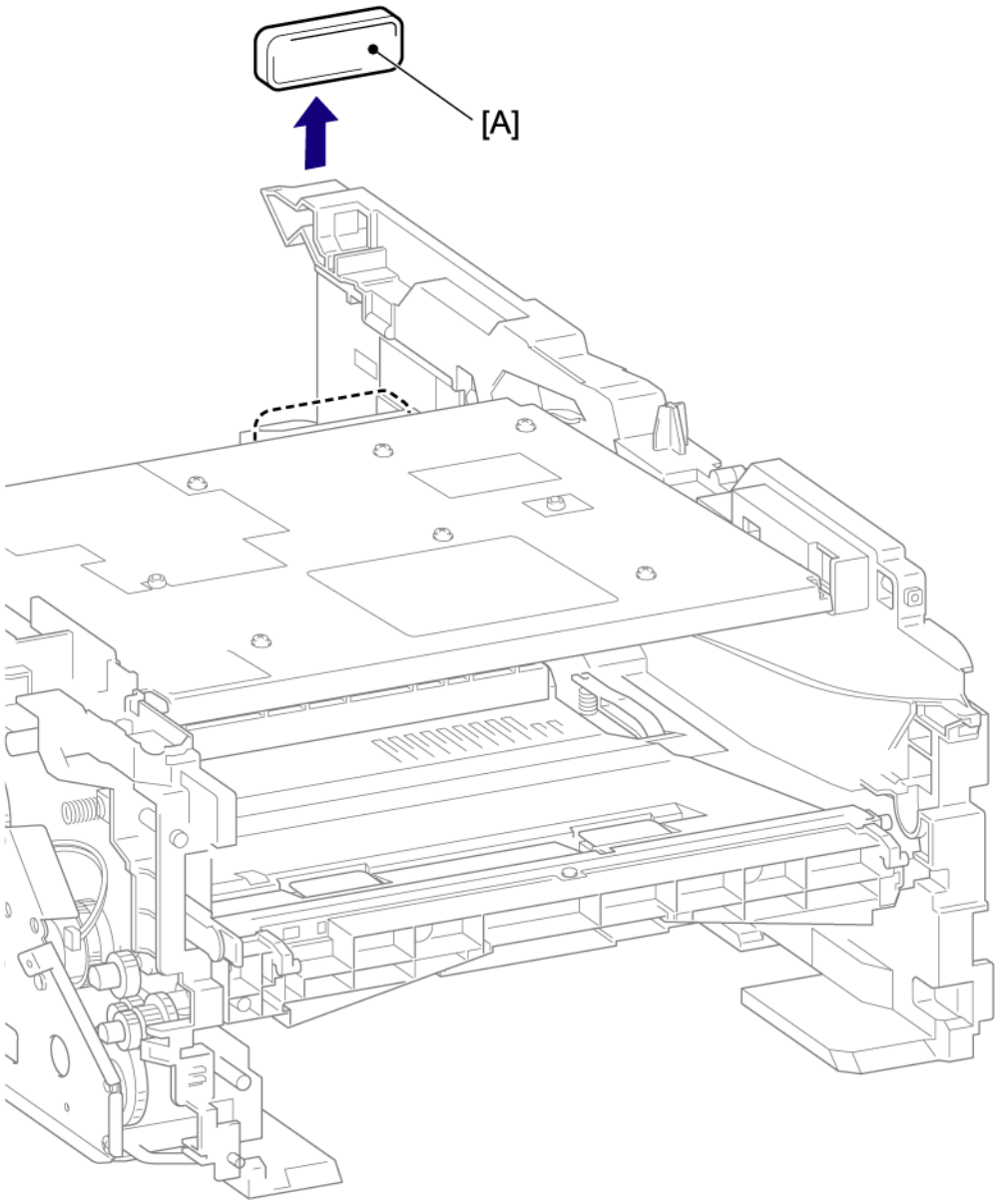


1. Release the Hook [A] to remove the New toner sensor harness ASSY [B] from the Main body.

Important

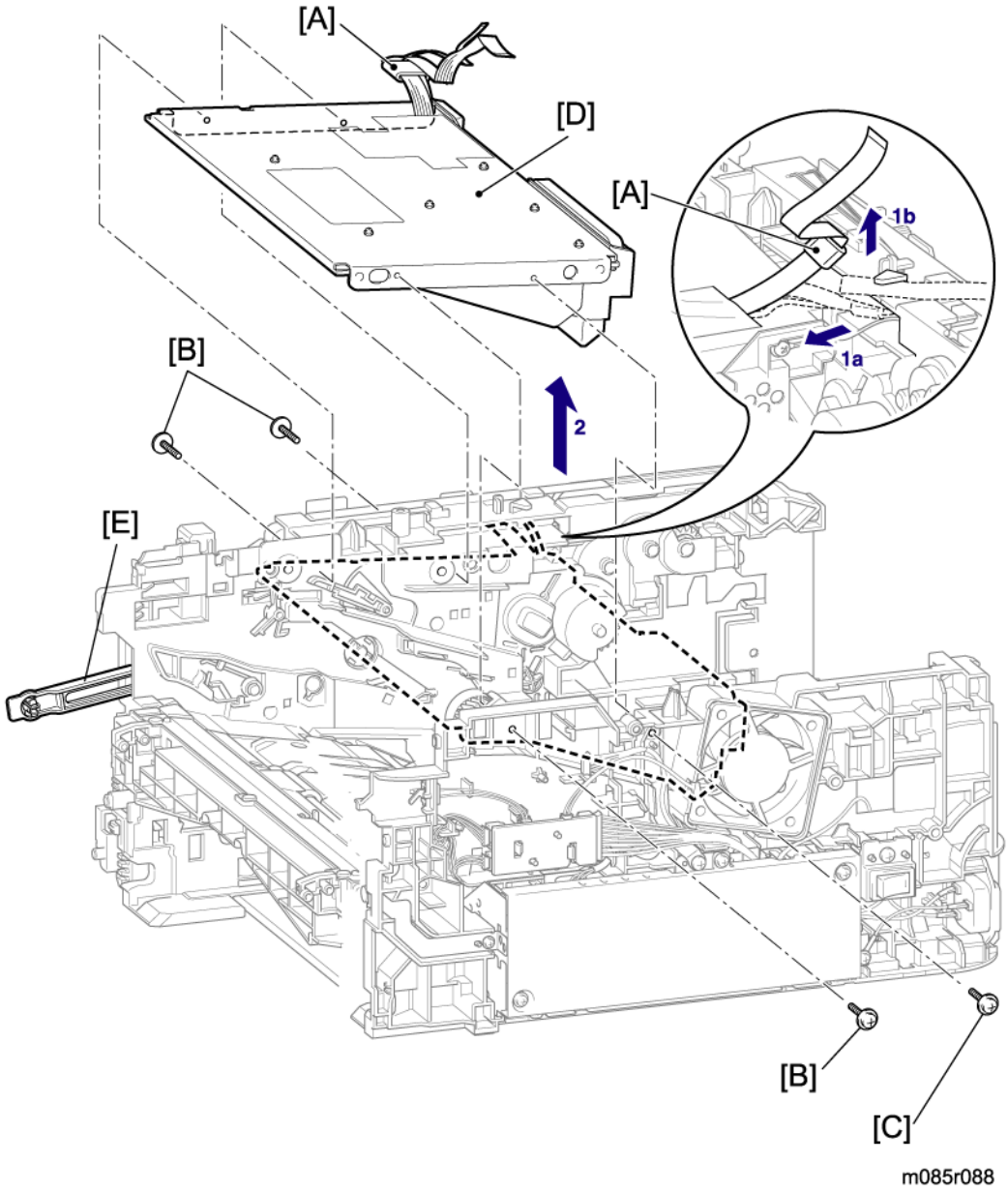
- Be careful not to damage the Hook of the New toner sensor harness ASSY.

4.9.9 FILTER ASSY



1. Remove the Filter ASSY [A] from the Main body.

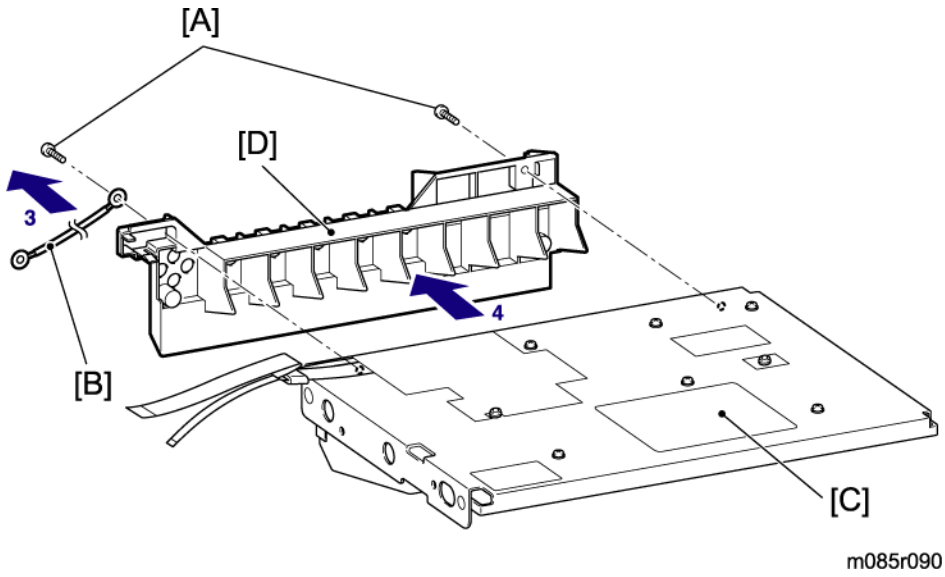
4.9.10 LASER UNIT



1. Remove the Core [A] from the Main body.
2. Remove the three Taptite cup S M3x6 SR screws [B] and the Taptite pan (S/P washer) S M3x8 screw [C], and then remove the Laser unit [D] from the Main body.

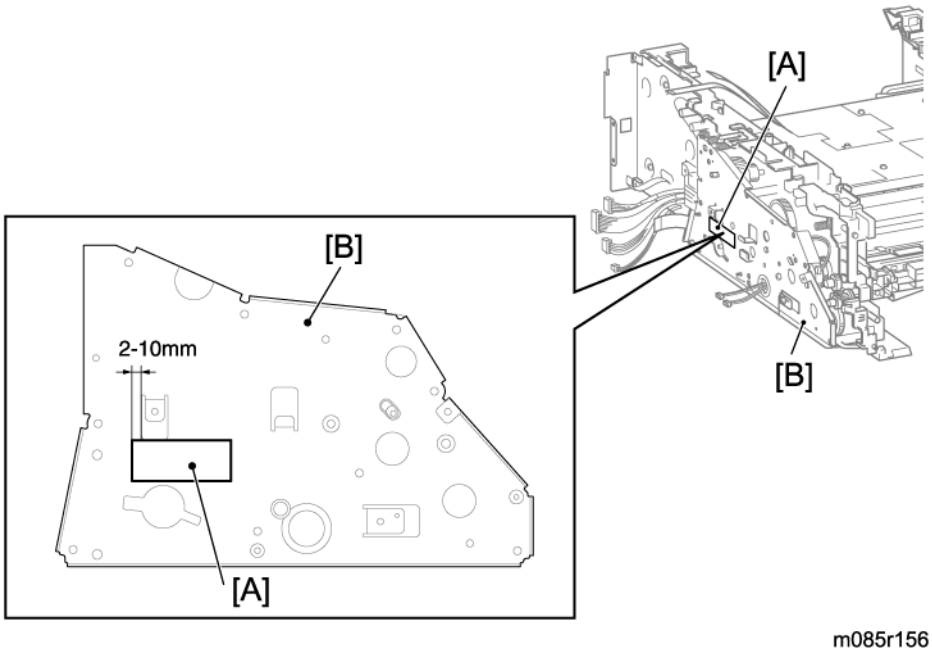
Note

- Ensure when you remove the Laser unit [D] that the DEV joint link [E] is pulled out.



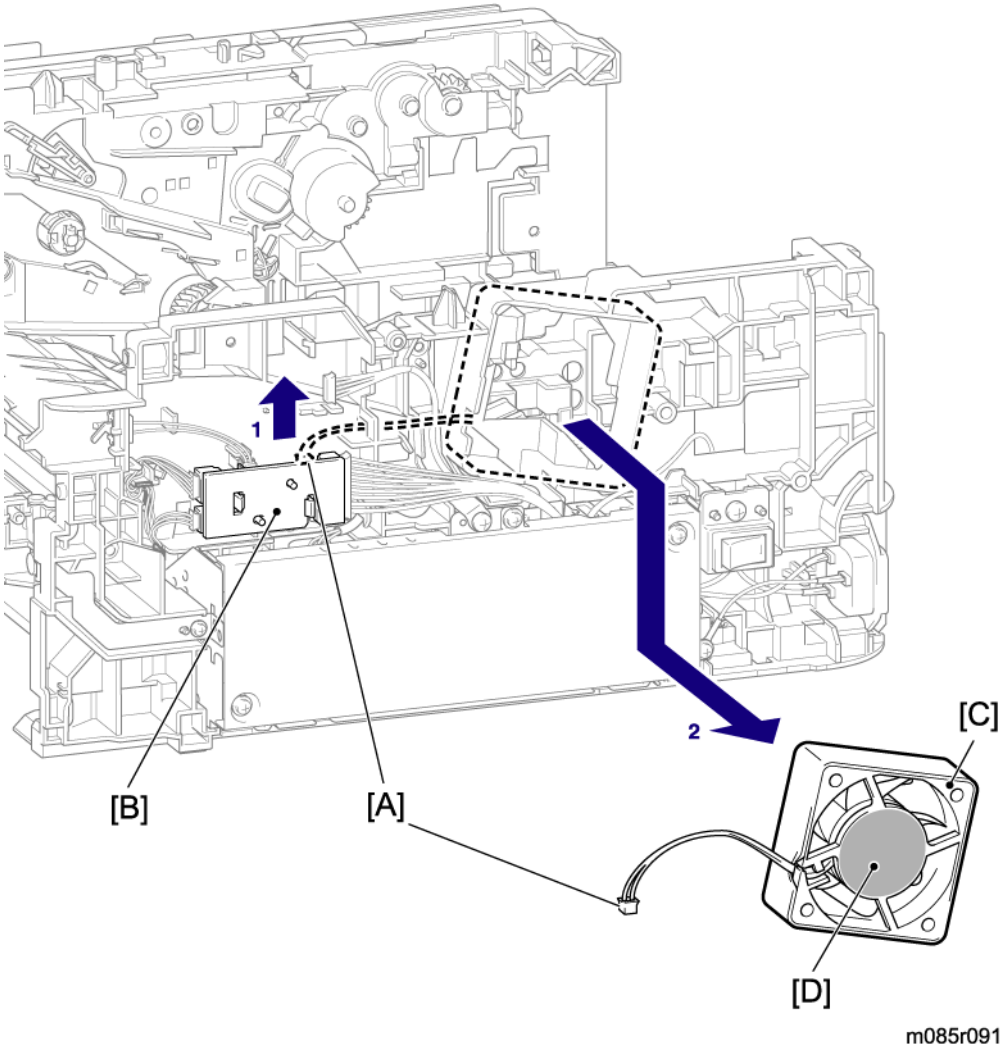
3. Remove the Taptite cup S M3x6 SR screw [A], and then remove the FG harness ASSY [B] from the Laser unit [C].
4. Remove the Taptite cup S M3x6 SR screw [A], and then remove the Air duct [D] from the Laser unit [C].

CAUTION



- When replacing the Laser unit, replace the Serial label [A] attached on the Drive sub ASSY [B] with the new one supplied with a new Laser unit. If an extra Serial label is supplied with a new unit as spare. Make sure to throw the spare label away after replacing the Laser unit, *** it is necessary to input the new Laser unit characteristics information.*** (p.4-121 "If You Replace the Laser Unit")

4.9.11 FAN MOTOR 60 UNIT

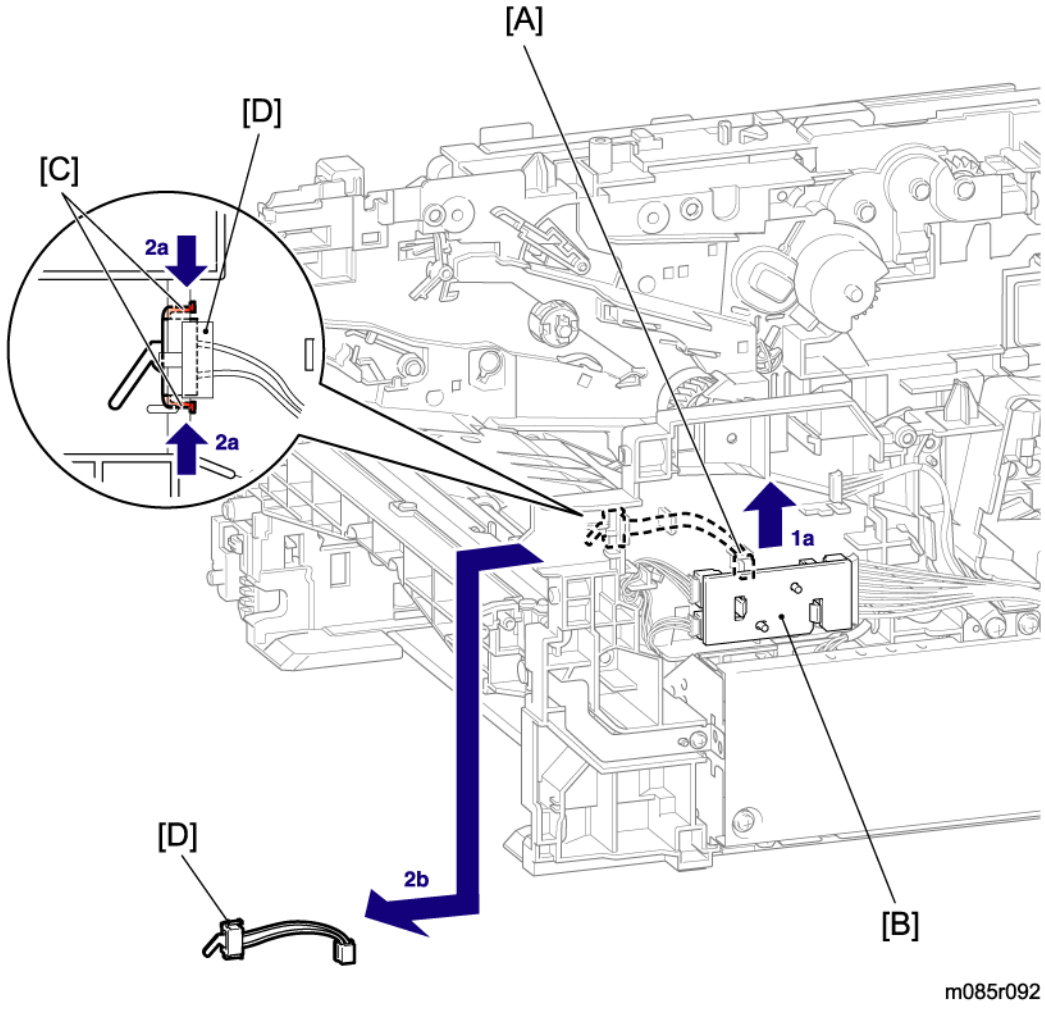


1. Disconnect the Connector [A] from the Toner LED PCB ASSY [B].
2. Remove the Fan motor 60 unit [C] from the Main body.

Assembling Note:

When assembling the Fan motor 60 unit [C], place it so that the attached Label [D] faces outwards.

4.9.12 COVER SENSOR HARNESS ASSY

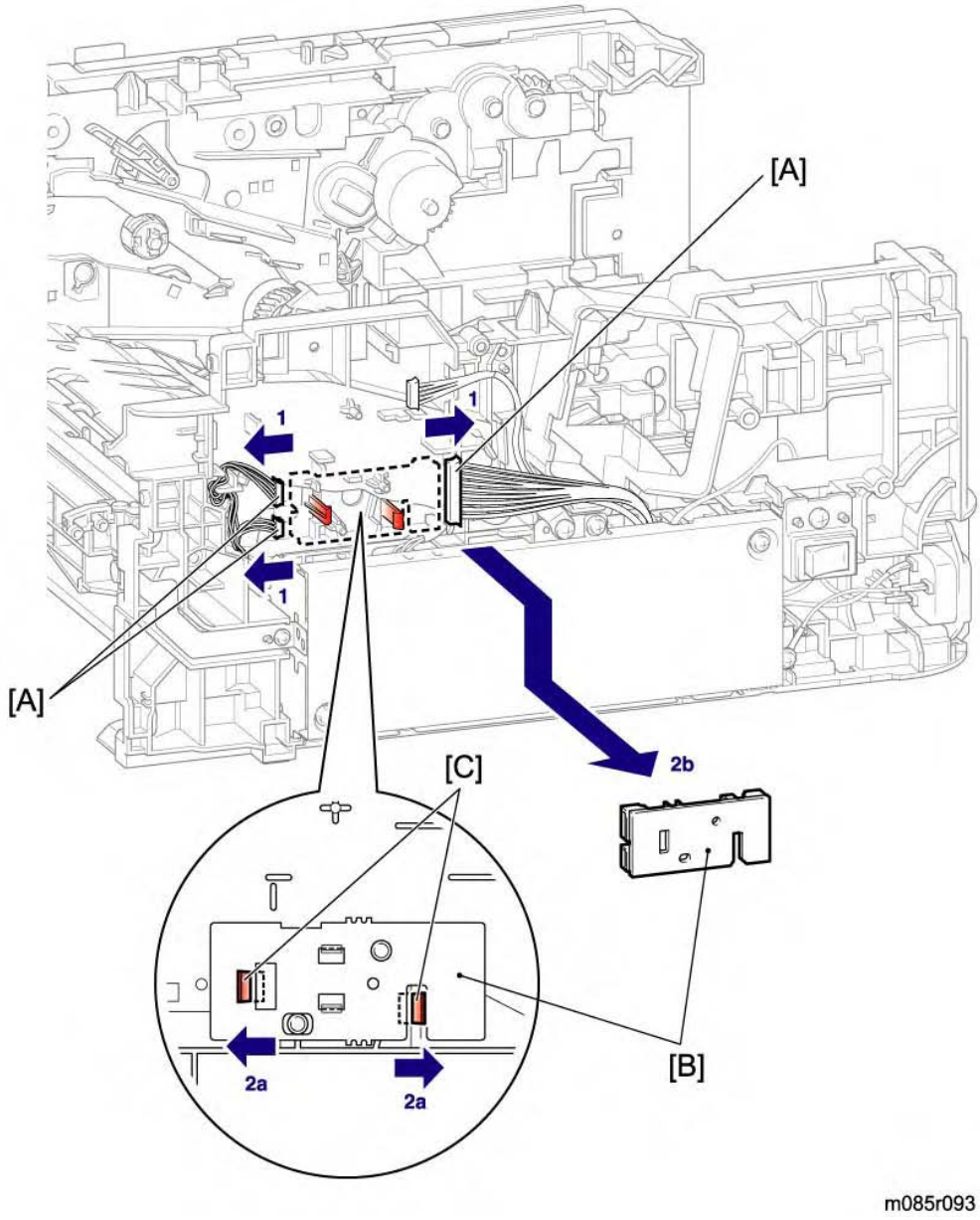


1. Disconnect the Connector [A] from the Toner LED PCB ASSY [B].
2. Release the Hook [C] to remove the Cover sensor harness ASSY [D] from the Main body.

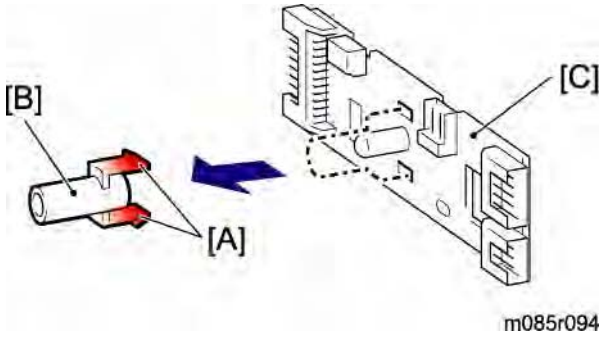
Important

- When removing the Cover sensor harness ASSY [D], remove it as shown in the direction of the allow 2b. Be careful not to damage the Hook [C].

4.9.13 TONER LED PCB ASSY

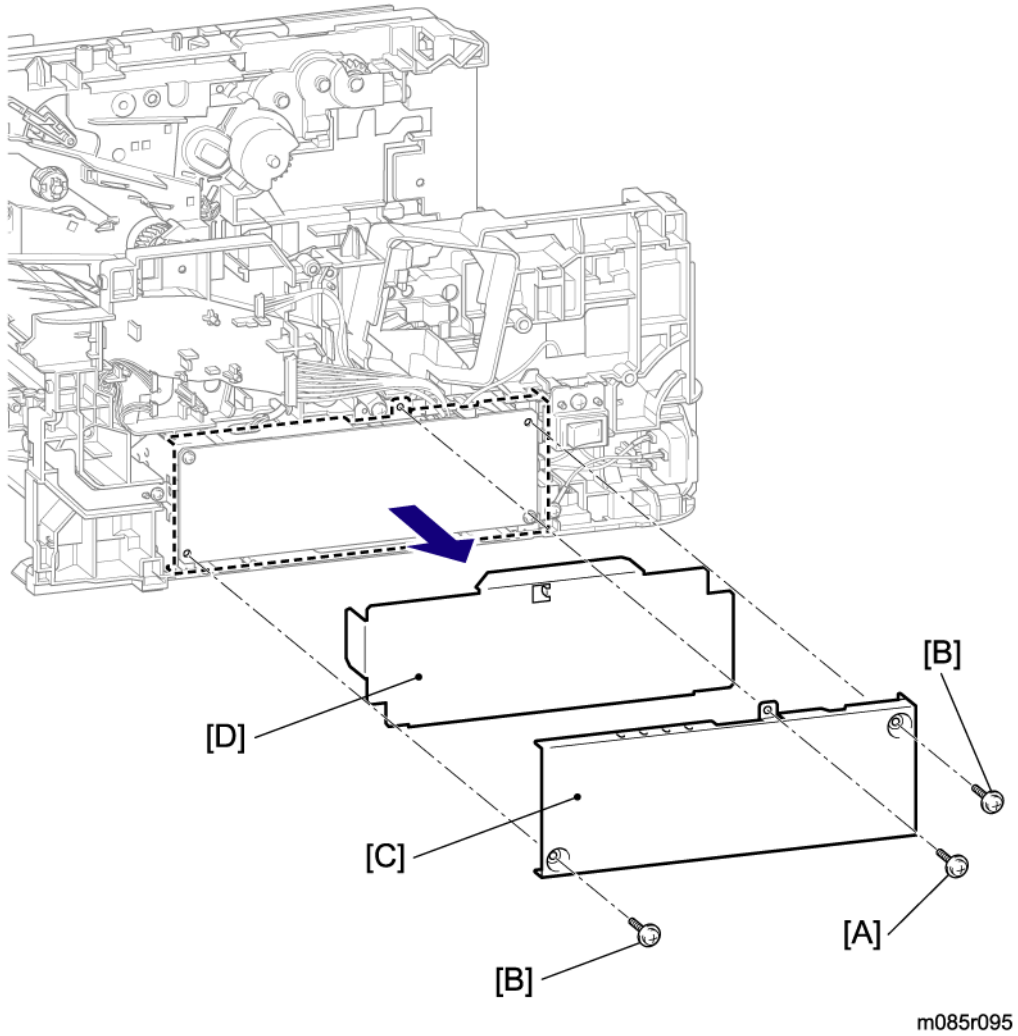


1. Disconnect the three Connectors [A] from the Toner LED PCB ASSY [B].
2. Release the Hook [C] to remove the Toner LED PCB ASSY [B] from the Main body.

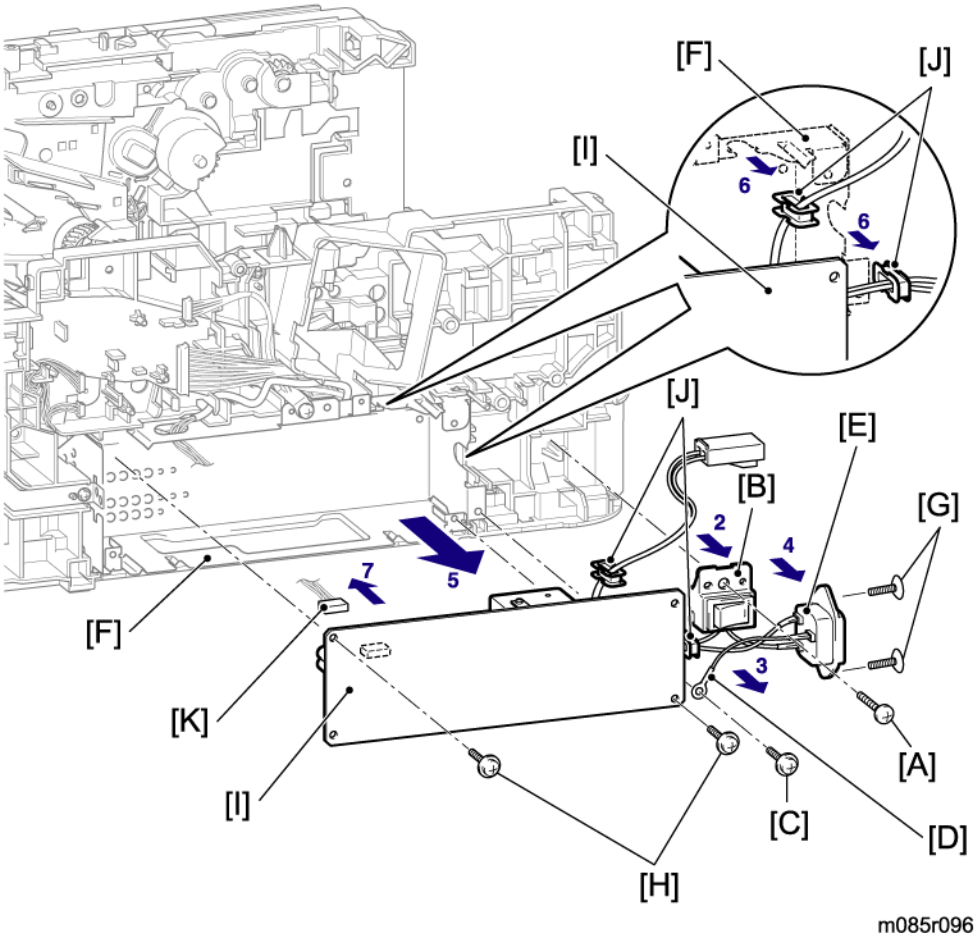


3. Release the Hook [A] to remove the LED holder [B] from the Toner LED PCB ASSY [C].

4.9.14 LVPS PCB UNIT

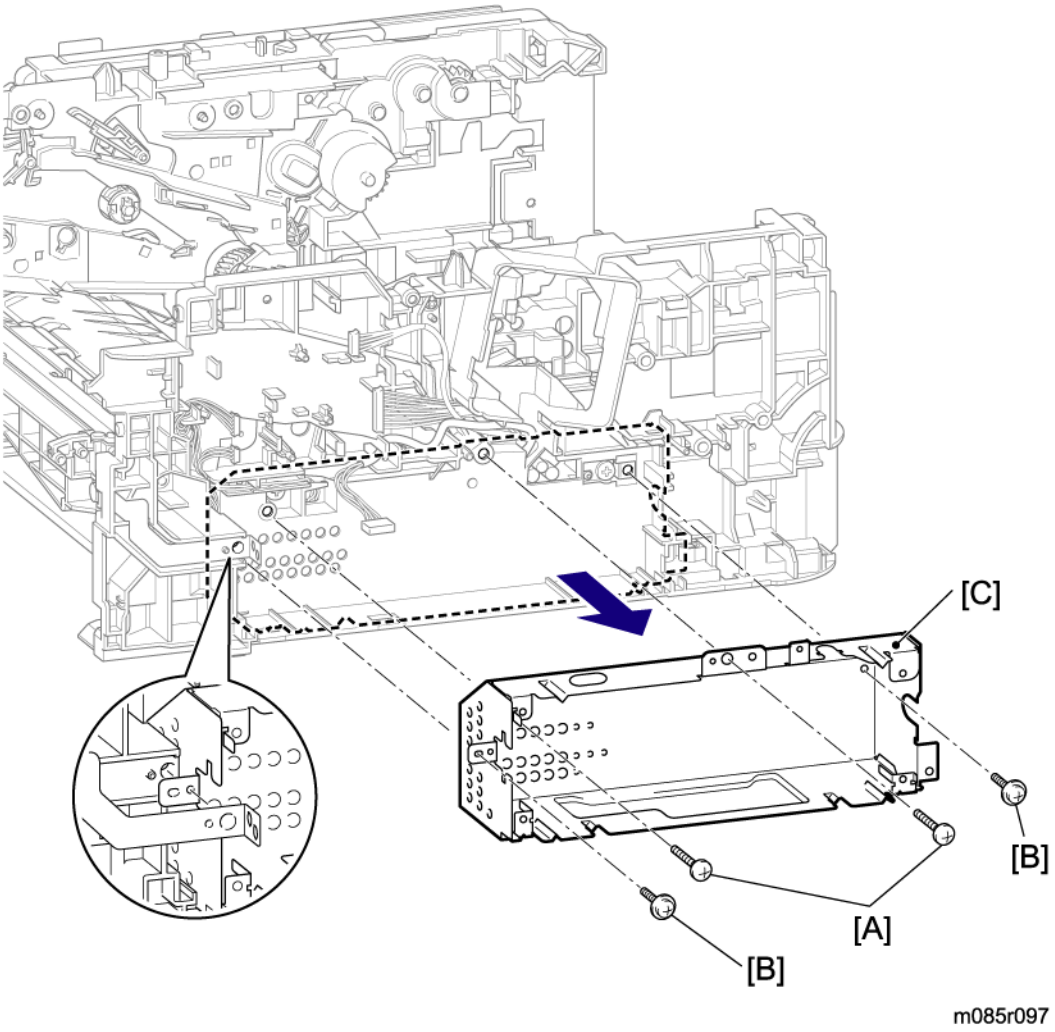


1. Remove the Taptite pan (S/P washer) M3.5x6 screw [A] and the two Taptite cup S M3x6 SR screws [B], and then remove the LV shield plate cover [C] and the LV insulation sheet [D] from the LV Shield plate 2.



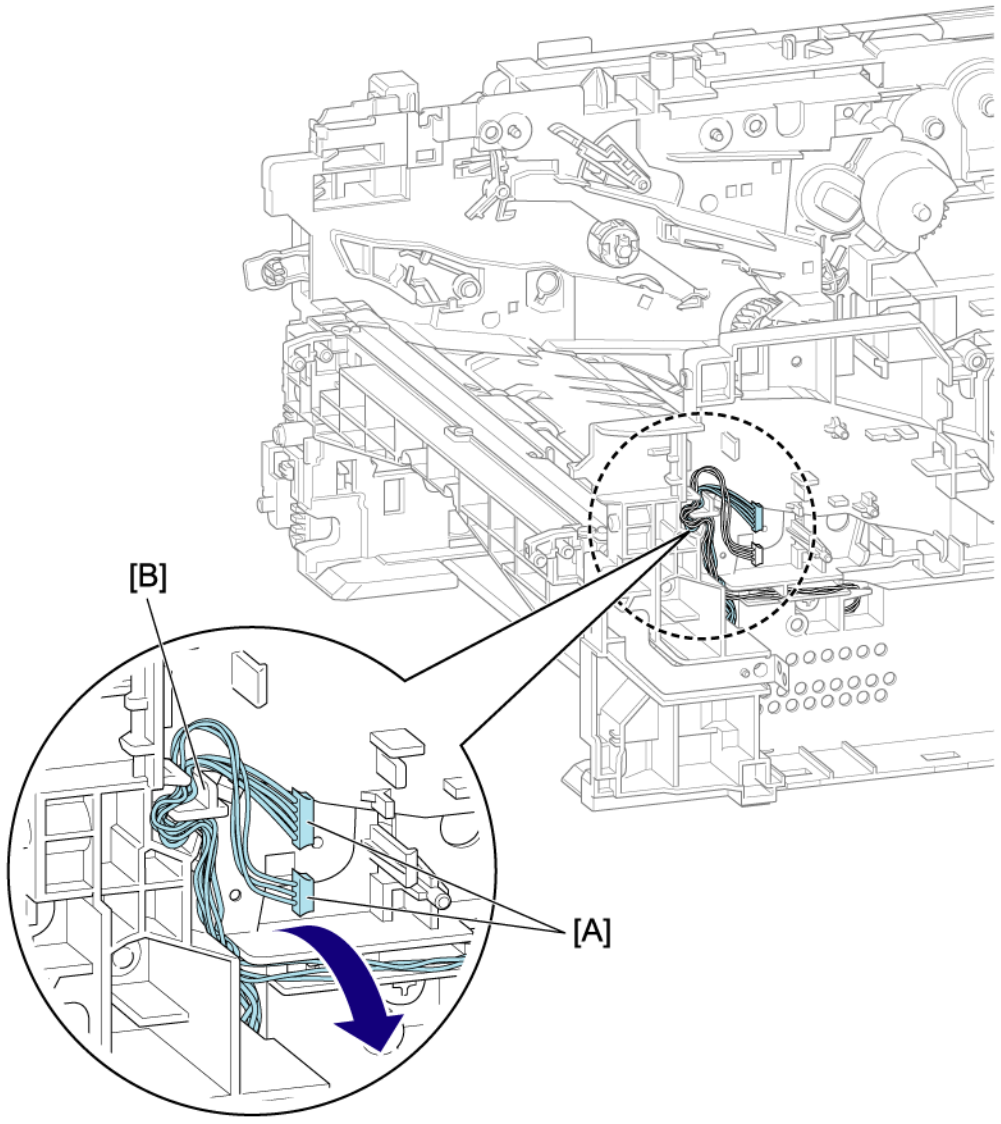
2. Remove the Taptite bind B M4x12 screw [A], and then remove the SW holder [B] from the Main body.
3. Remove the Taptite pan (S/P washer) M3.5x6 screw [C], and then remove the FG harness ASSY [D] of the Inlet harness ASSY [E] from the LV shield plate 2 [F].
4. Remove the two Taptite flat B M3x10 screws [G], and then remove the Inlet harness ASSY [E] from the Main body.
5. Remove the two Taptite cup S M3x6 SR screws [H], and then remove the LVPS PCB unit [I] from the LV shield plate 2 [F].
6. Remove the two Edge holder 3 [J] from the LV shield plate 2 [F].
7. Disconnect the Connector [K] from the LVPS PCB unit [I].

4.9.15 LV SHIELD PLATE 2

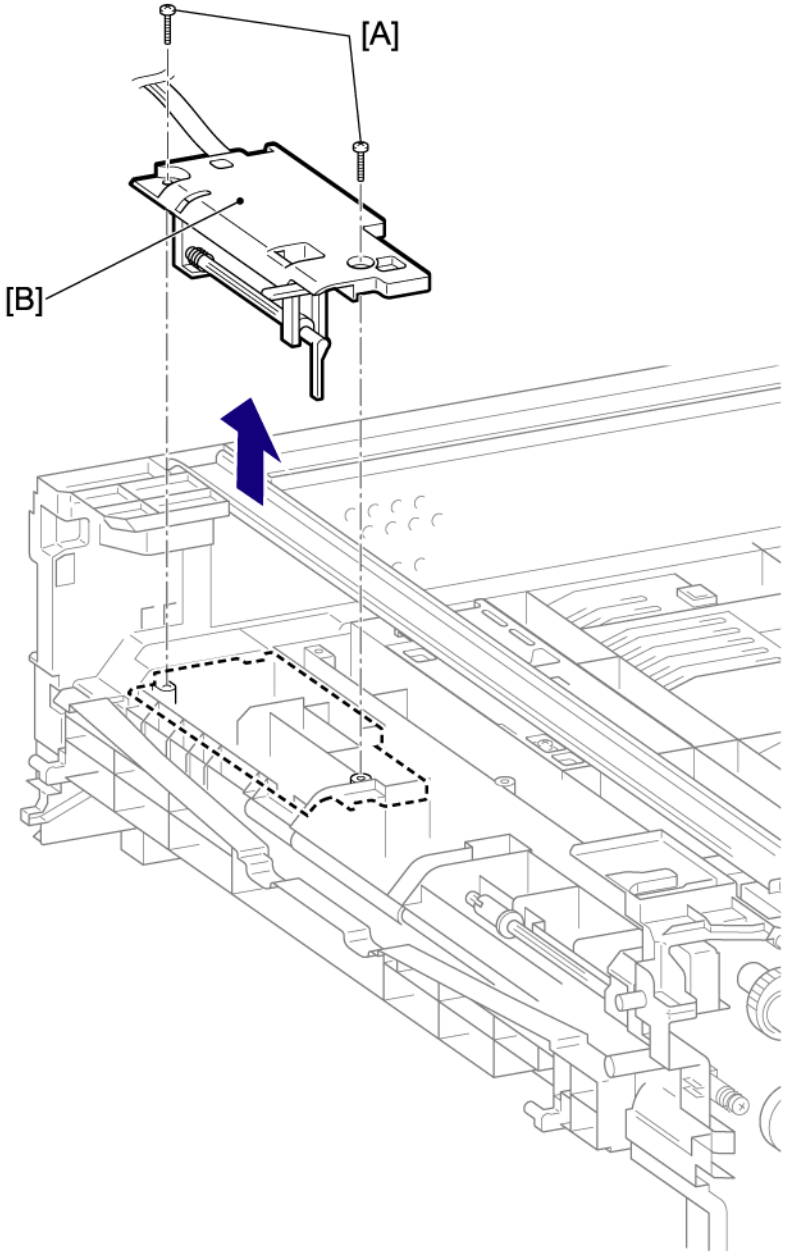


1. Remove the two Taptite bind B M4x12 screws [A] and the two Taptite cup S M3x6 SR screws [B], and then remove the LV shield plate 2 [C].

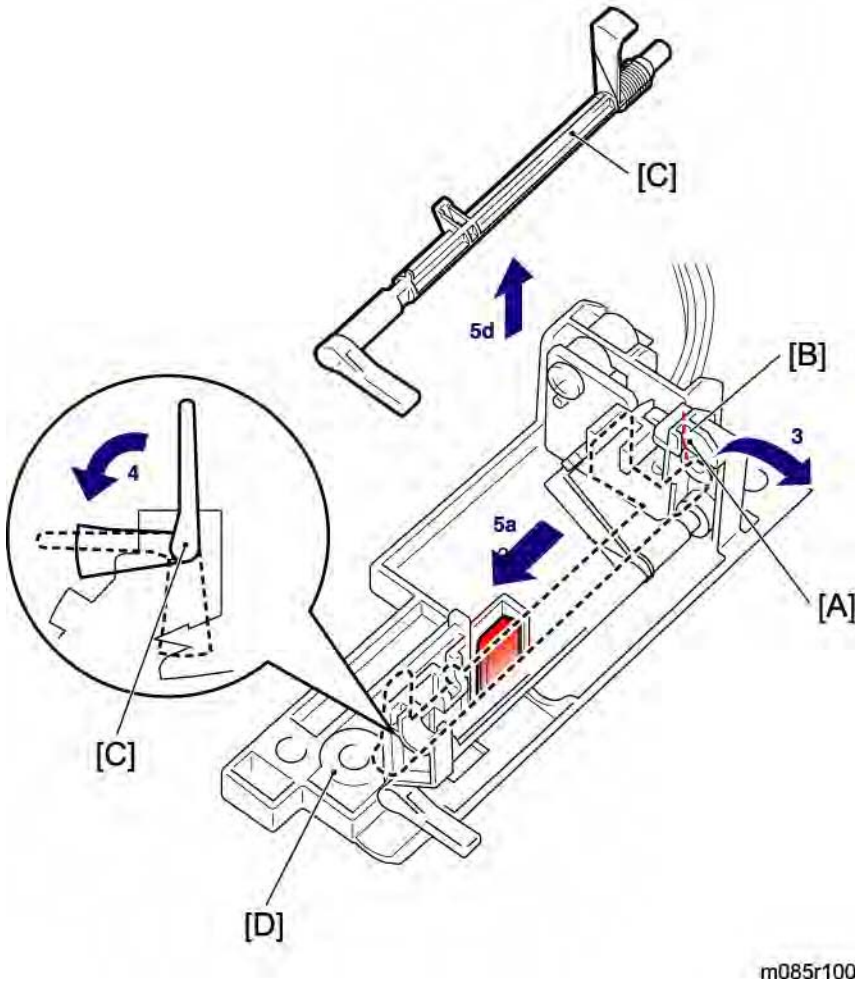
4.9.16 REGISTRATION FRONT SENSOR PCB ASSY



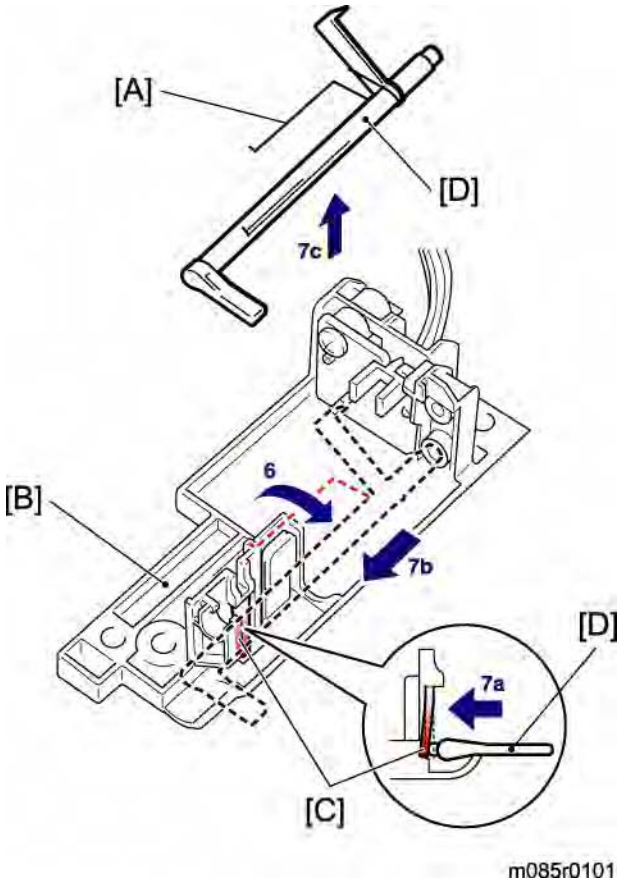
1. Remove the Harness [A] of the Registration front sensor PCB ASSY and the Registration rear sensor PCB ASSY from the Guide part [B] of the Main body.



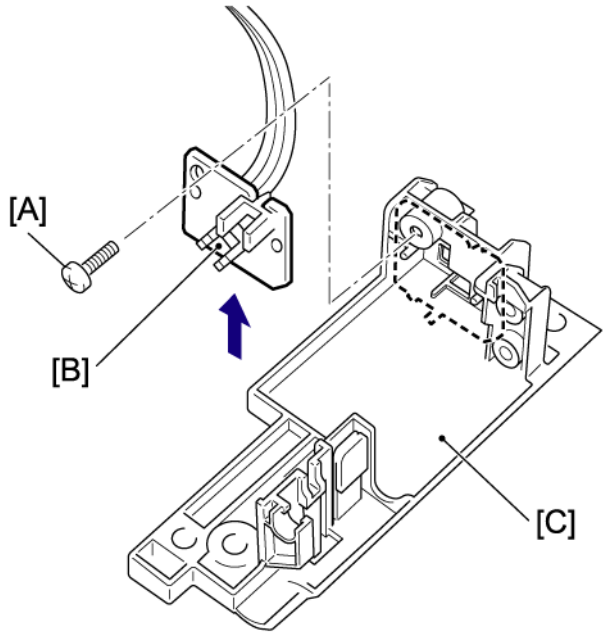
2. Remove the two Taptite bind B M3x10 screws [A], and then remove the Actuator holder ASSY [B] from the Main body.



3. Remove the Registration actuator spring [A] from the Hook part [B].
4. Turn the Registration front actuator [C] at 90 degrees in the direction of counterclockwise as the arrow 4.
5. Slide the Registration front actuator [C] to remove the Registration front actuator [C] from the Actuator holder ASSY [D].



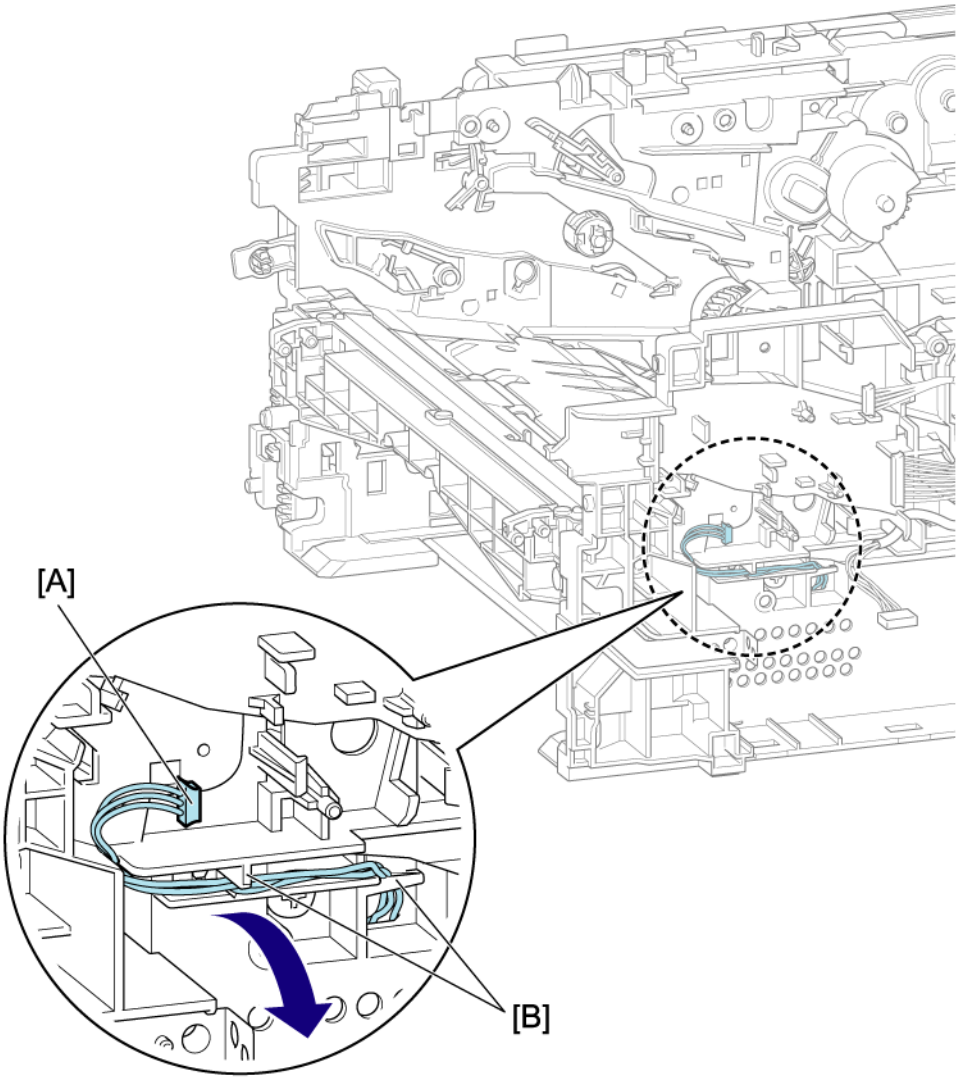
6. Loosen the tip of the Edge actuator spring [A] from the Actuator holder ASSY [B].
7. Release the Hook [C] and Slide the Edge actuator [D] to remove the Edge actuator [D] from the Actuator holder ASSY [B].



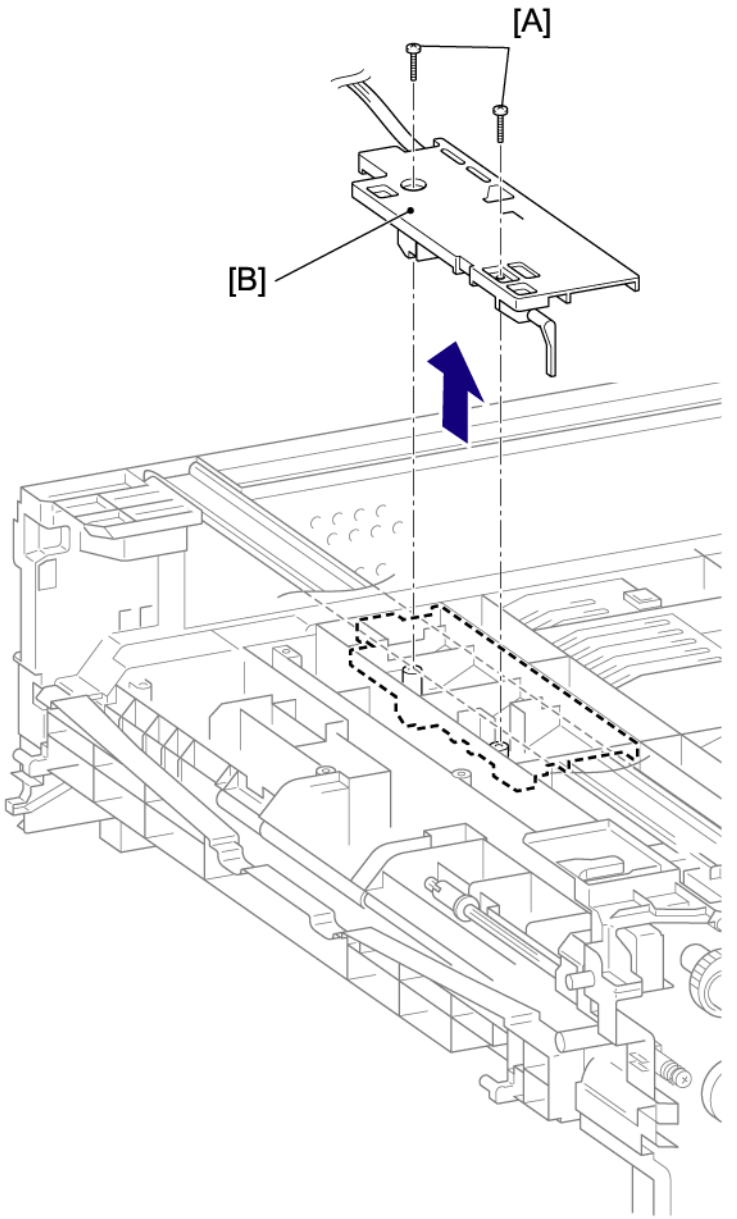
m085r102

8. Remove the Taptite bind B M3x10 screw [A], and then remove the Registration front sensor PCB ASSY [B] from the Actuator holder ASSY [C].

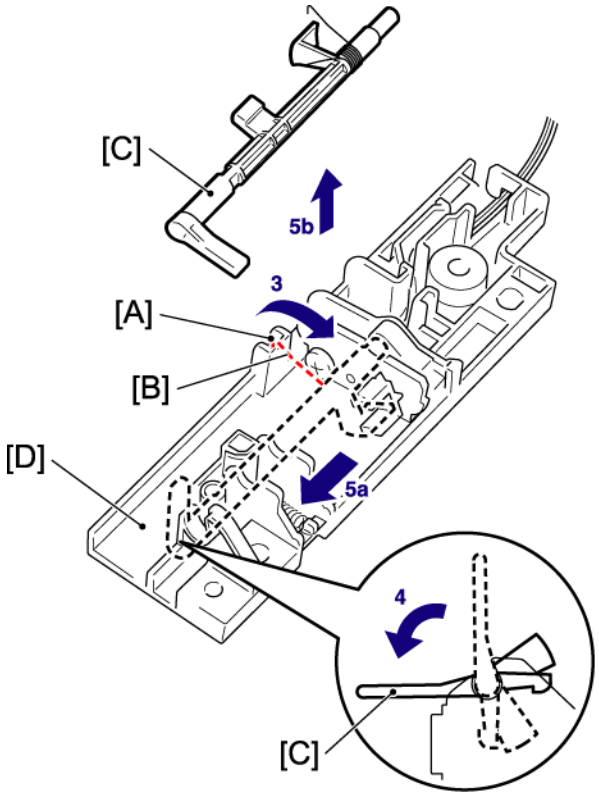
4.9.17 REGISTRATION REAR SENSOR PCB ASSY



1. Remove the Harness [A] of the Registration rear sensor PCB ASSY from the Guide part [B] of the Main body.

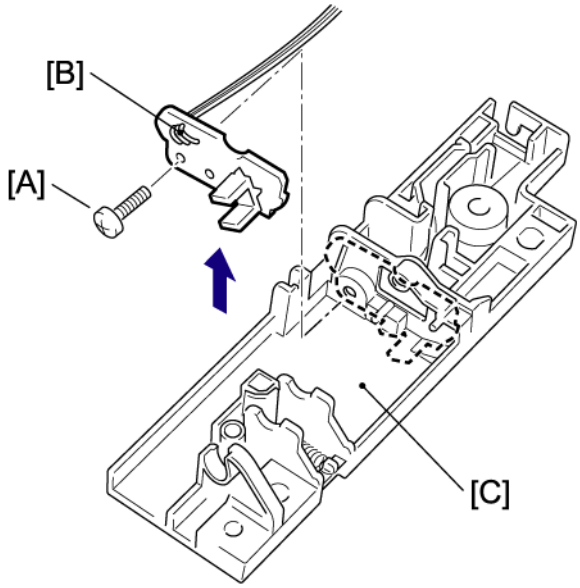


2. Remove the two Taptite bind B M3x10 screws [A], and then remove the Rear actuator holder ASSY [B] from the Main body.



m085r105

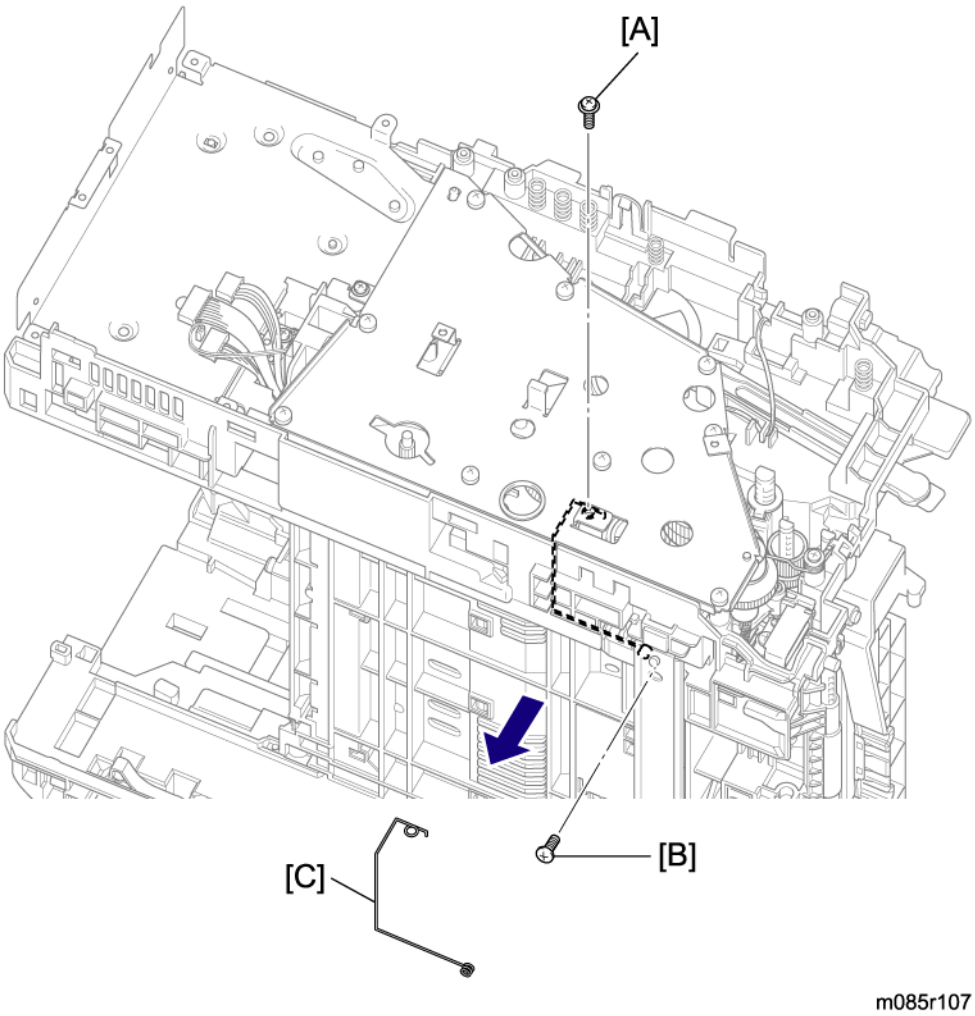
3. Remove the Actuator spring rear [A] from the Hook part [B].
4. Turn the Registration actuator rear [C].
5. Slide the Registration actuator rear [C] to remove the Registration actuator rear [C] from the Rear actuator holder ASSY [D].



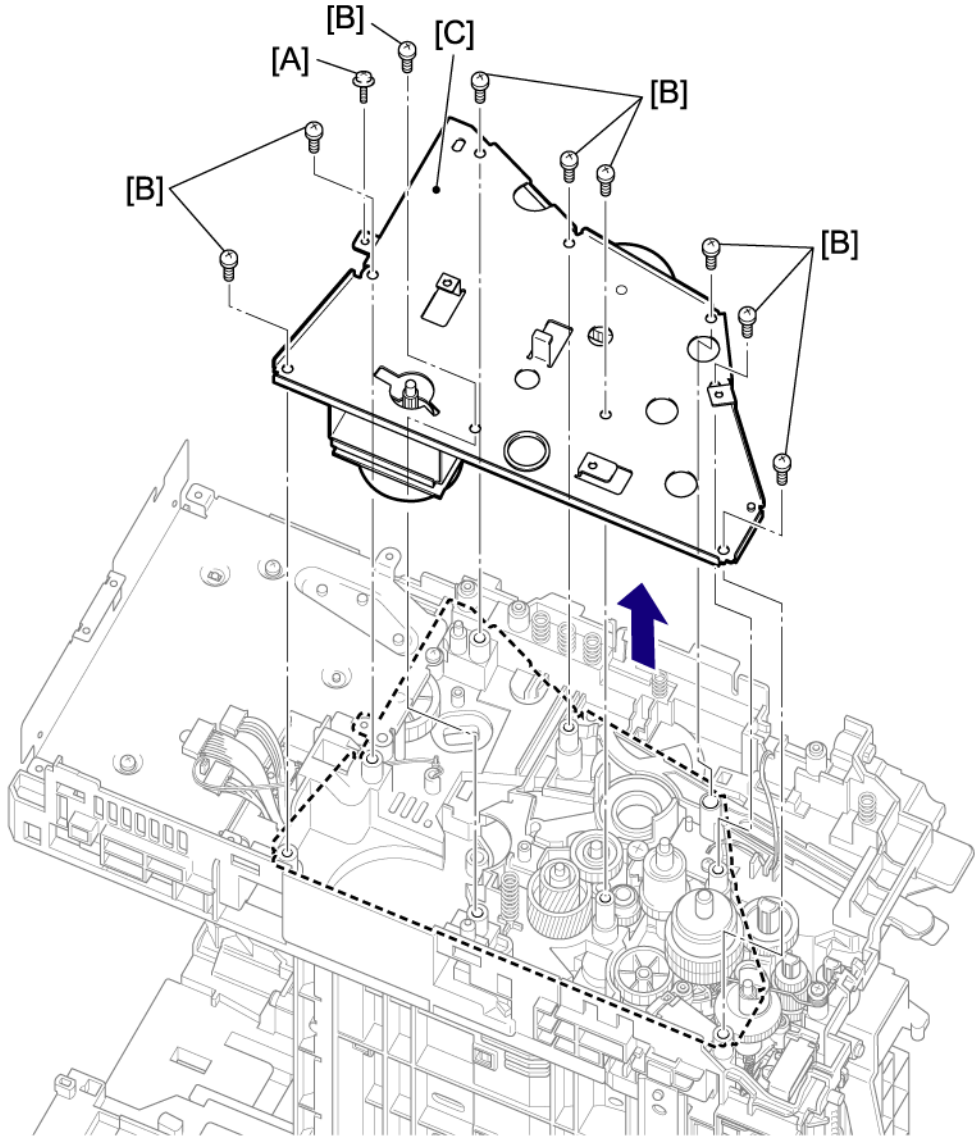
m085r106

6. Remove the Taptite bind B M3x10 screw [A], and then remove the Registration rear sensor PCB ASSY [B] from the Rear actuator holder ASSY [C].

4.9.18 DRIVE SUB ASSY



1. Remove the Taptite cup S M3x6 SR screw [A] and the Taptite bind B M4x12 screw [B] on the Main frame L Assy, and then remove the Under FG wire [C] from the Main body.



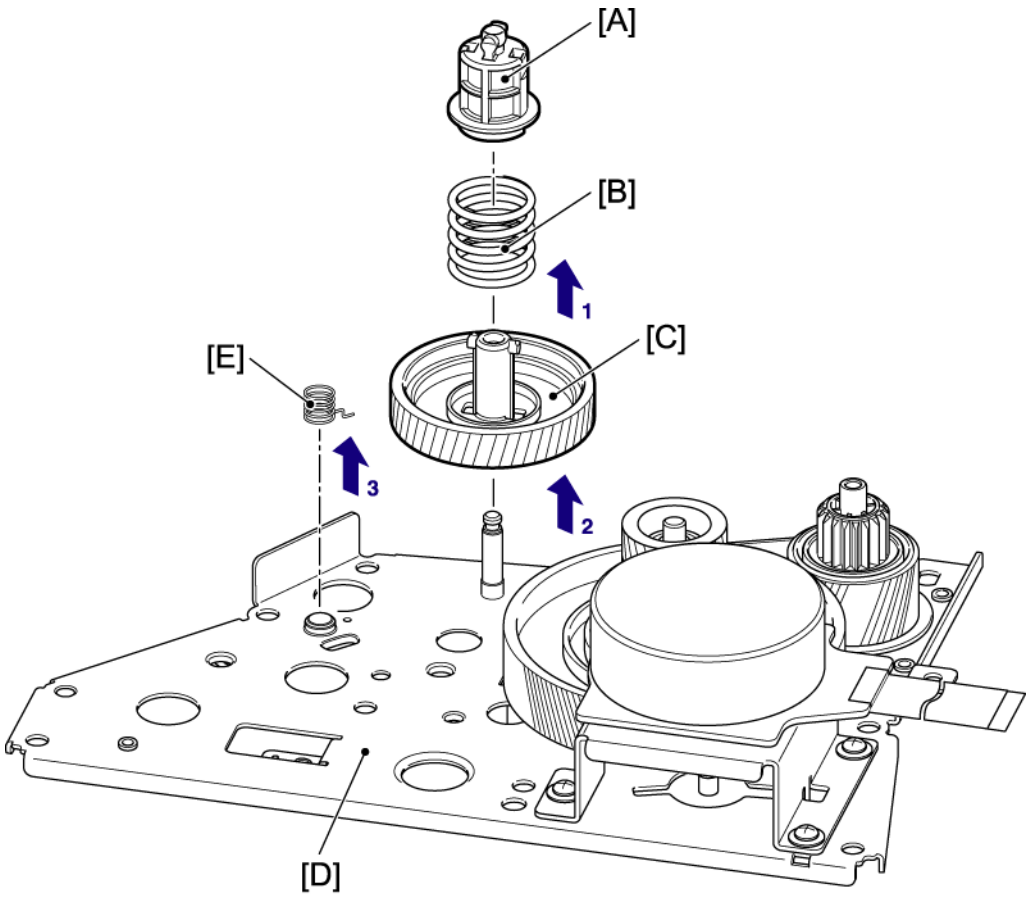
m085r108

2. Remove the Taptite cup S M3x6 SR screw [A] and the nine Taptite bind B M4x12 screws [B], and then remove the Drive sub ASSY [C] from the Main body.

Important

- When removing the Drive sub ASSY, Ensure the left side of the Main body is at the top as shown in the above figure because there is the risk of the gears falling off.

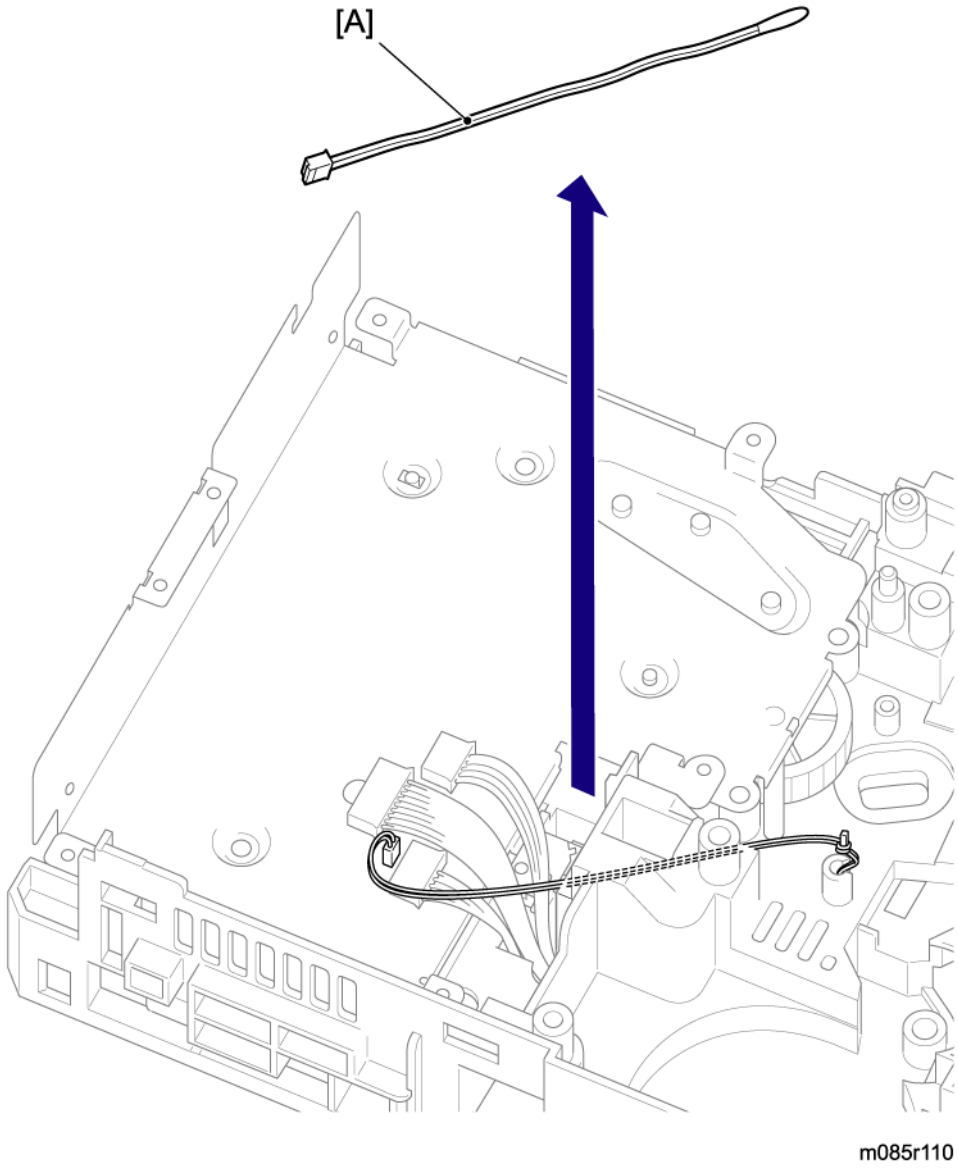
4.9.19 DEV JOINT / DEV GEAR JOINT 53R / REGISTRATION PENDULUM GEAR SPRING



m085r109

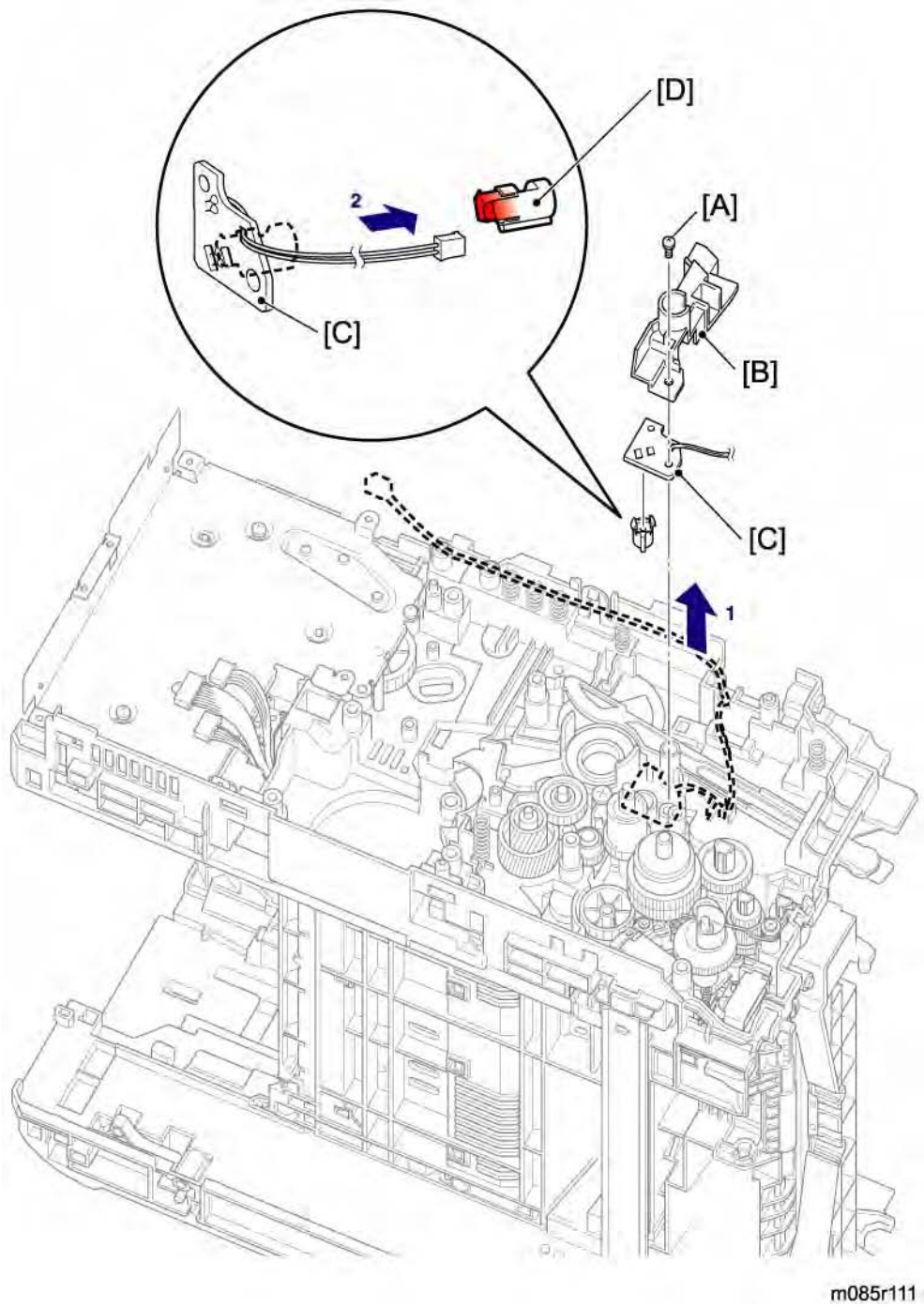
1. Remove the DEV joint [A] and the DEV joint spring [B] from the DEV gear joint/53R [C].
2. Remove the DEV gear joint/53R [C] from the Drive sub ASSY [D].
3. Remove the Registration pendulum gear spring [E] from the Drive sub ASSY [D].

4.9.20 THERMISTOR HARNESS UNIT



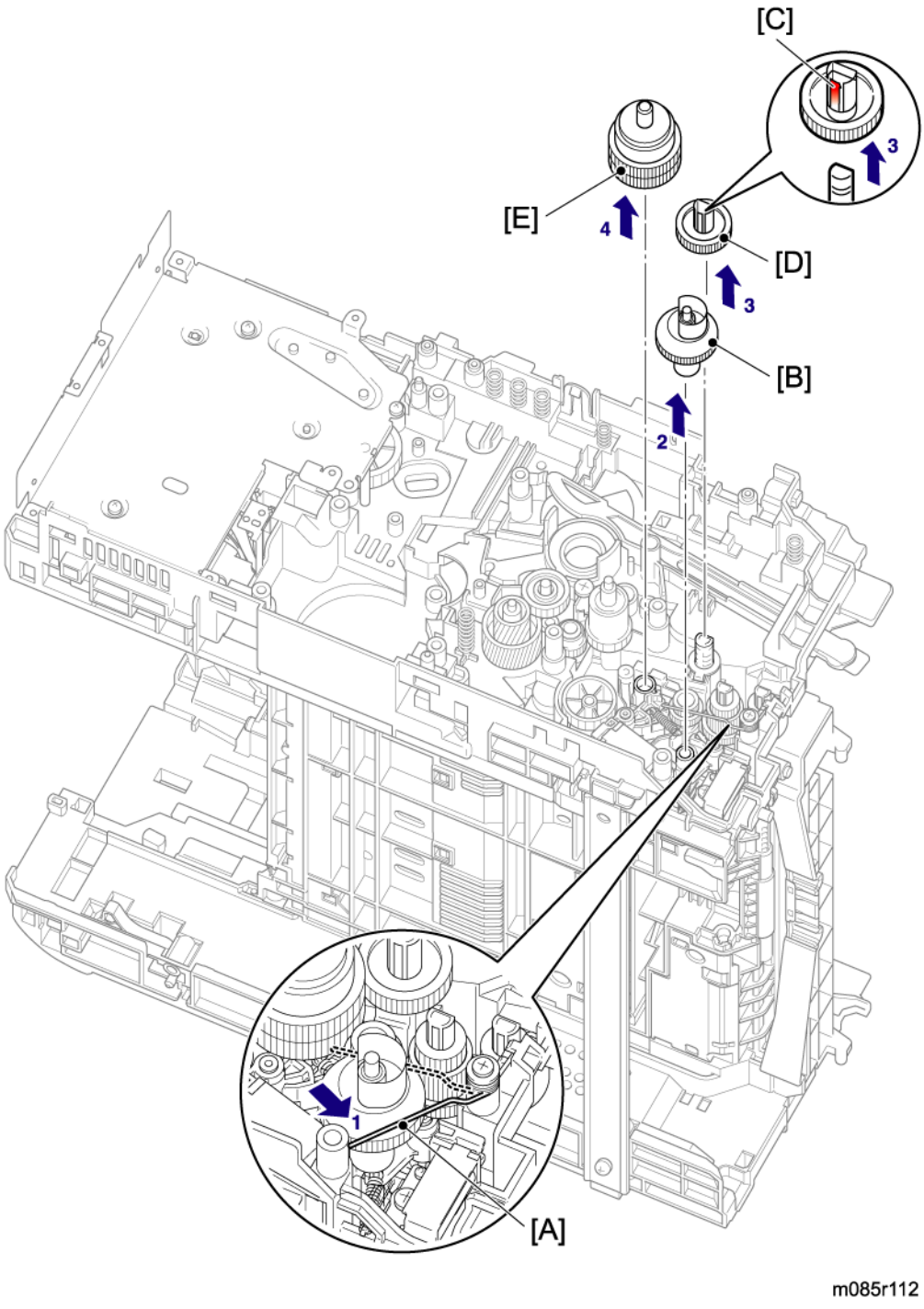
1. Remove the Thermistor harness unit [A] from the Main body.

4.9.21 TONER SENSOR PCB UNIT ASSY



1. Remove the Taptite bind B M3x10 screw [A], and then remove the Link stopper [B] and the Toner sensor PCB unit ASSY [C] from the Main body.
2. Remove the PT sensor holder [D] from the Toner sensor PCB unit ASSY [C].

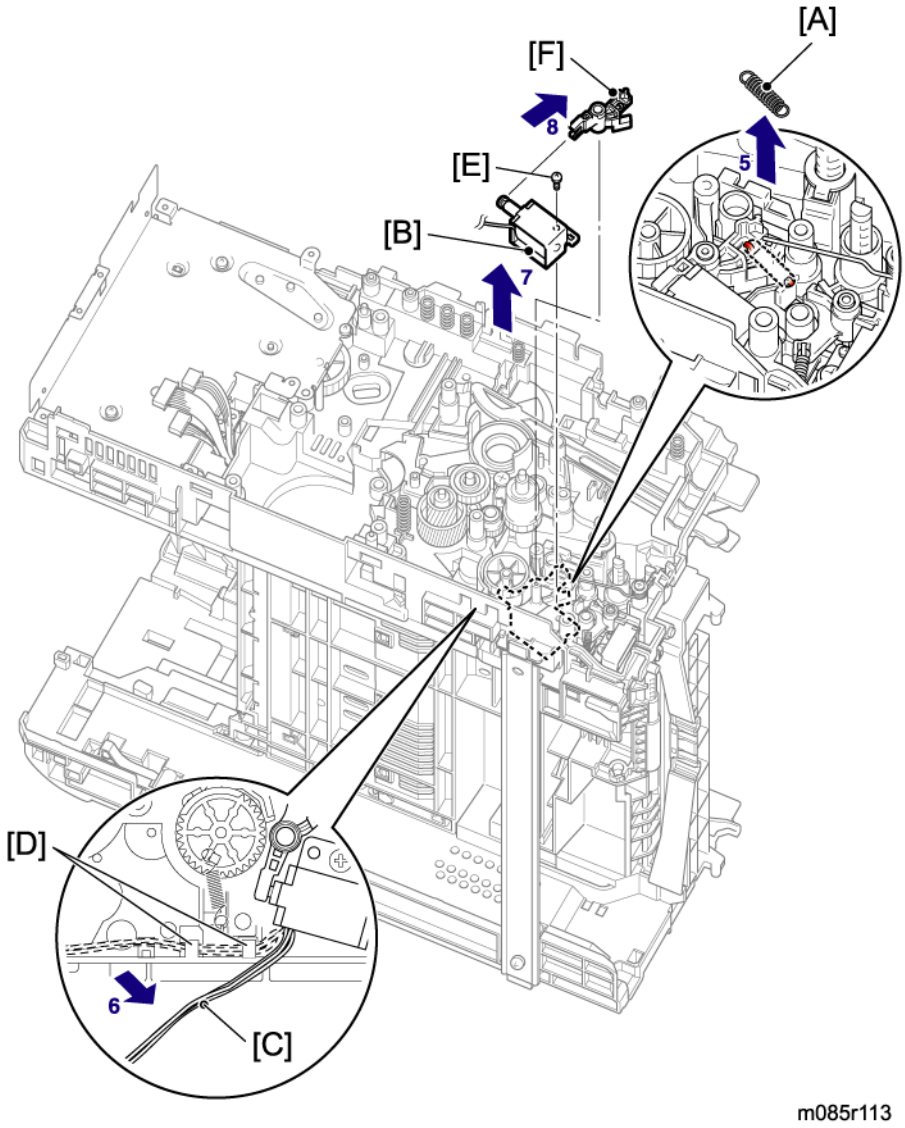
4.9.22 REGISTRATION SOLENOID



1. Remove the T1 sector gear spring [A] from the T1 gear 38/31 sector [B].
2. Remove the T1 gear 38/31 sector [B] from the Main body.
3. Release the Hook [C] to remove the Registration gear 25 terminal [D] from the Main body.
4. Remove the Registration differential gear ASSY [E] from the Main body.

Important

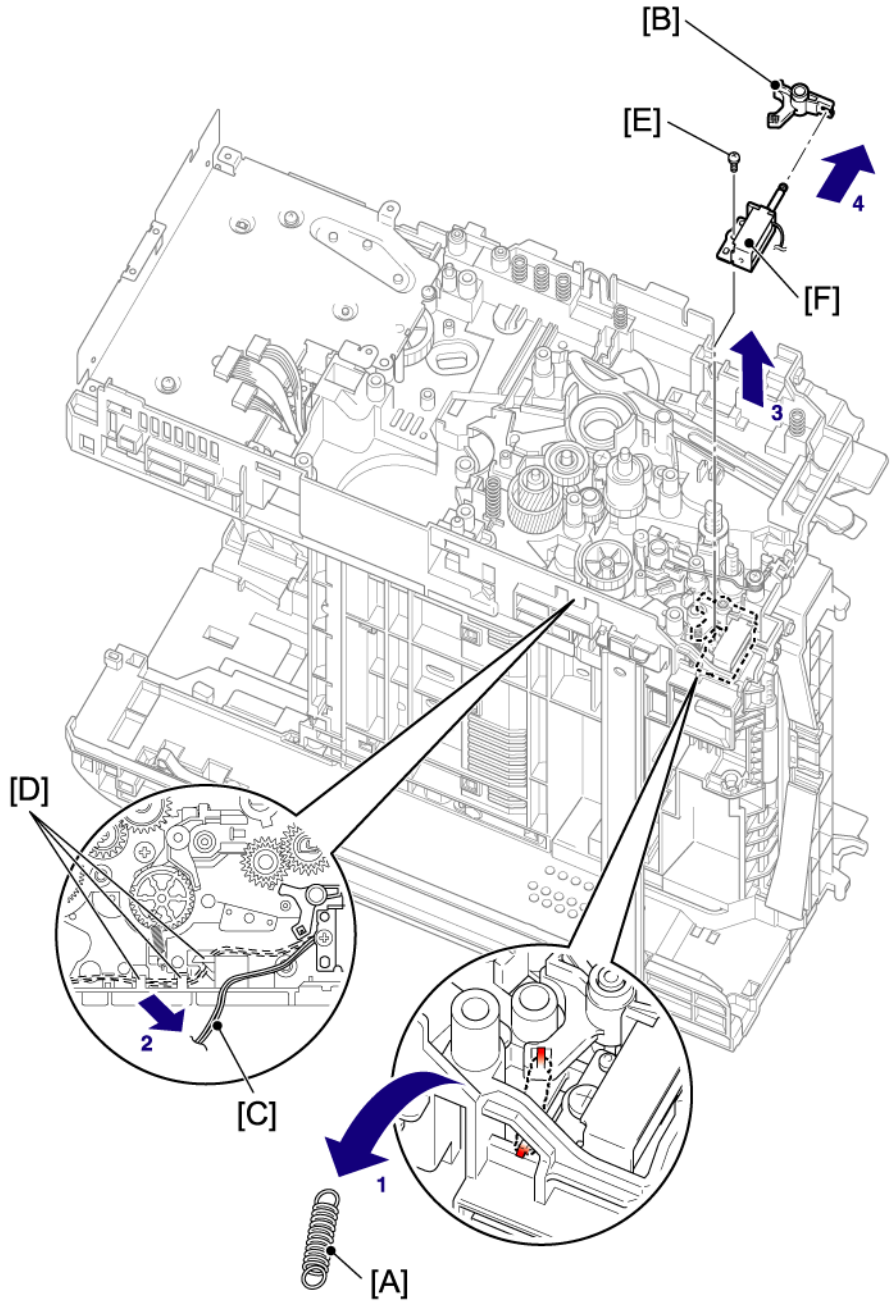
- Be careful, as the inside gear of the Registration differential gear ASSY [E] is easy to fall out.



m085r113

5. Remove the Registration solenoid lever spring [A] from the Main body and the Registration solenoid lever [B].
6. Remove the Harness [C] from the Guide part [D] of the Main body.
7. Remove the Taptite bind B M3x10 screw [E], and then remove the Registration solenoid [F] from the Main body.
8. Remove the Registration solenoid lever [B] from the Registration solenoid [F].

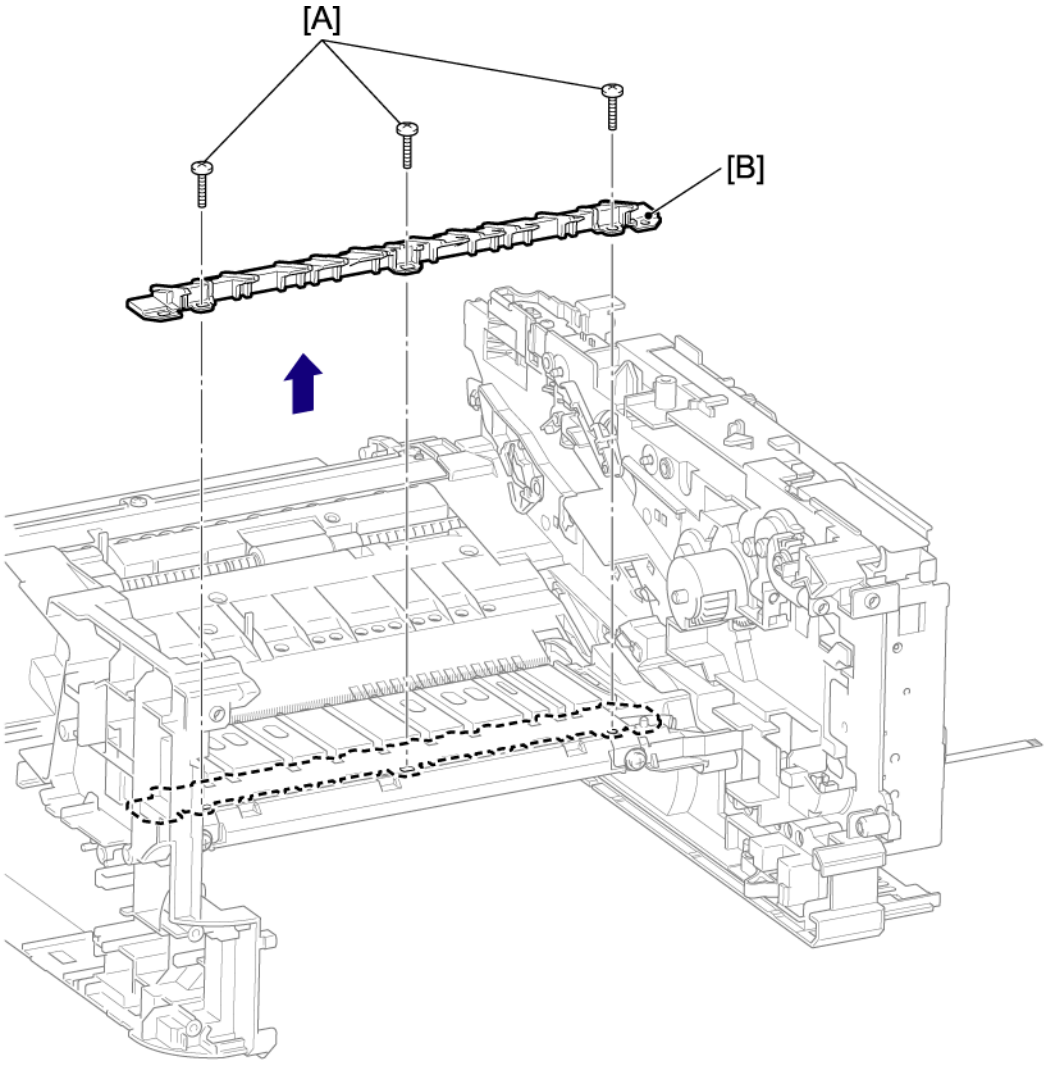
4.9.23 T1 SOLENOID



m085r114

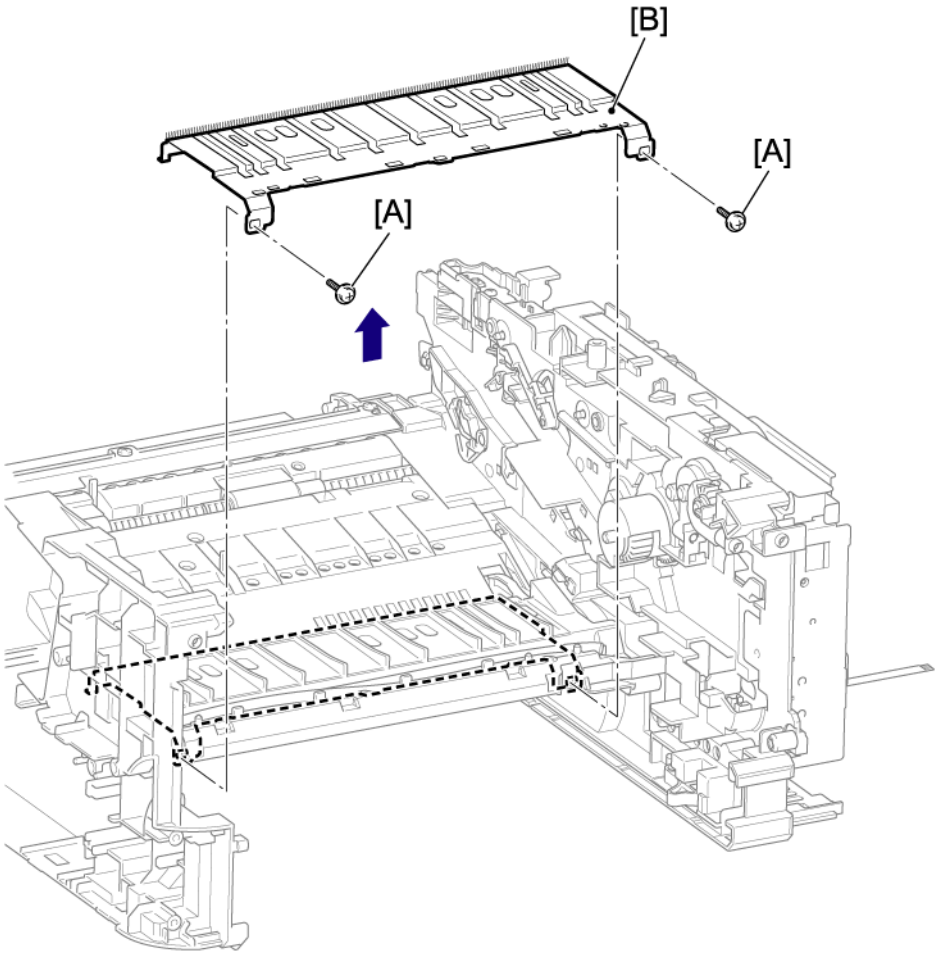
1. Remove the T1 solenoid lever spring [A] from the Main body and the T1 solenoid lever [B].
2. Remove the Harness [C] from the Guide part [D] of the Main body.
3. Remove the Taptite bind B M3x10 screw [E], and then remove the T1 solenoid [F] from the Main body.
4. Remove the T1 solenoid lever [B] from the T1 solenoid [F].

4.9.24 MAIN SHIELD PLATE / EJECT SENSOR PCB ASSY

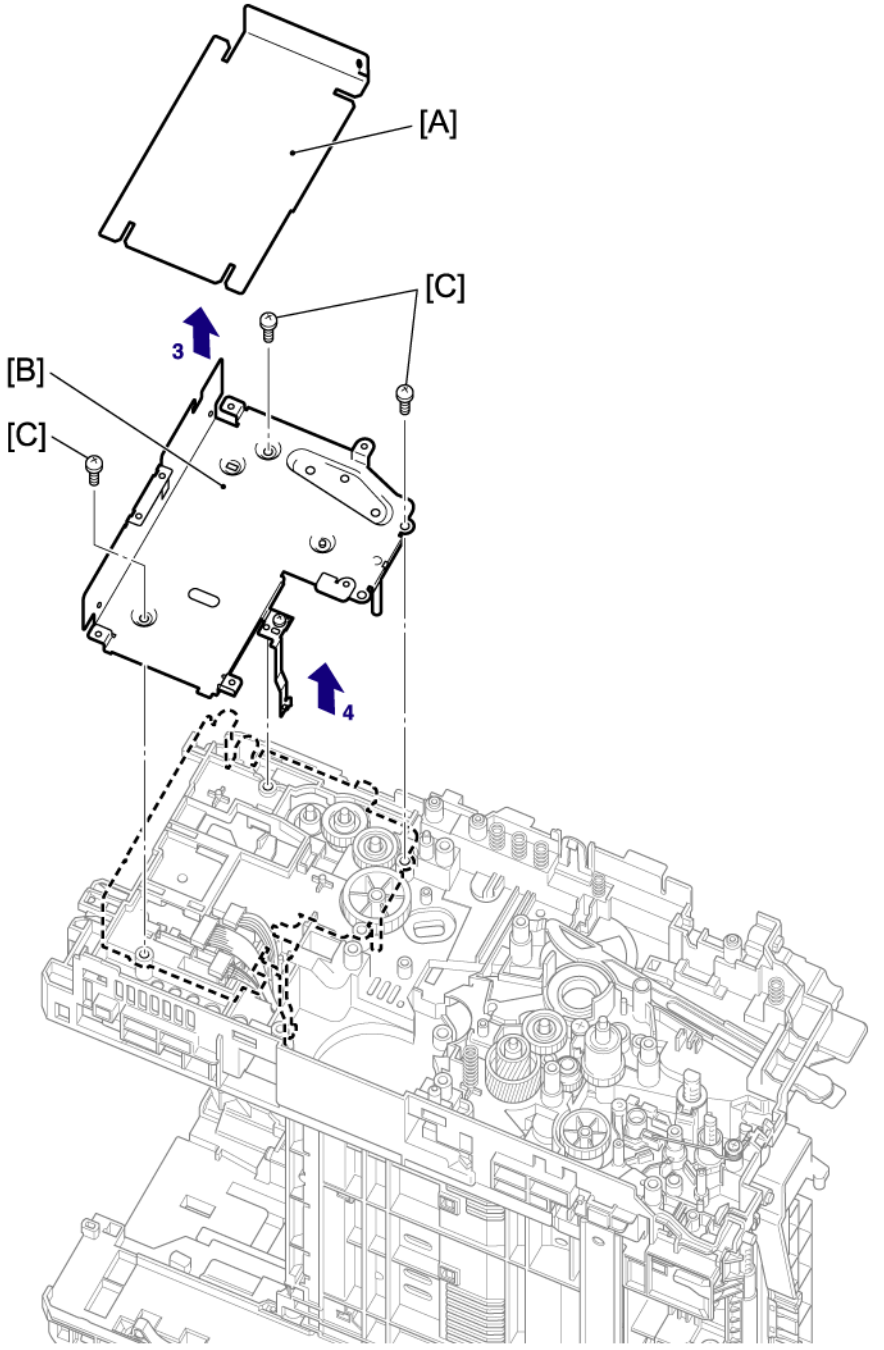


m085r115

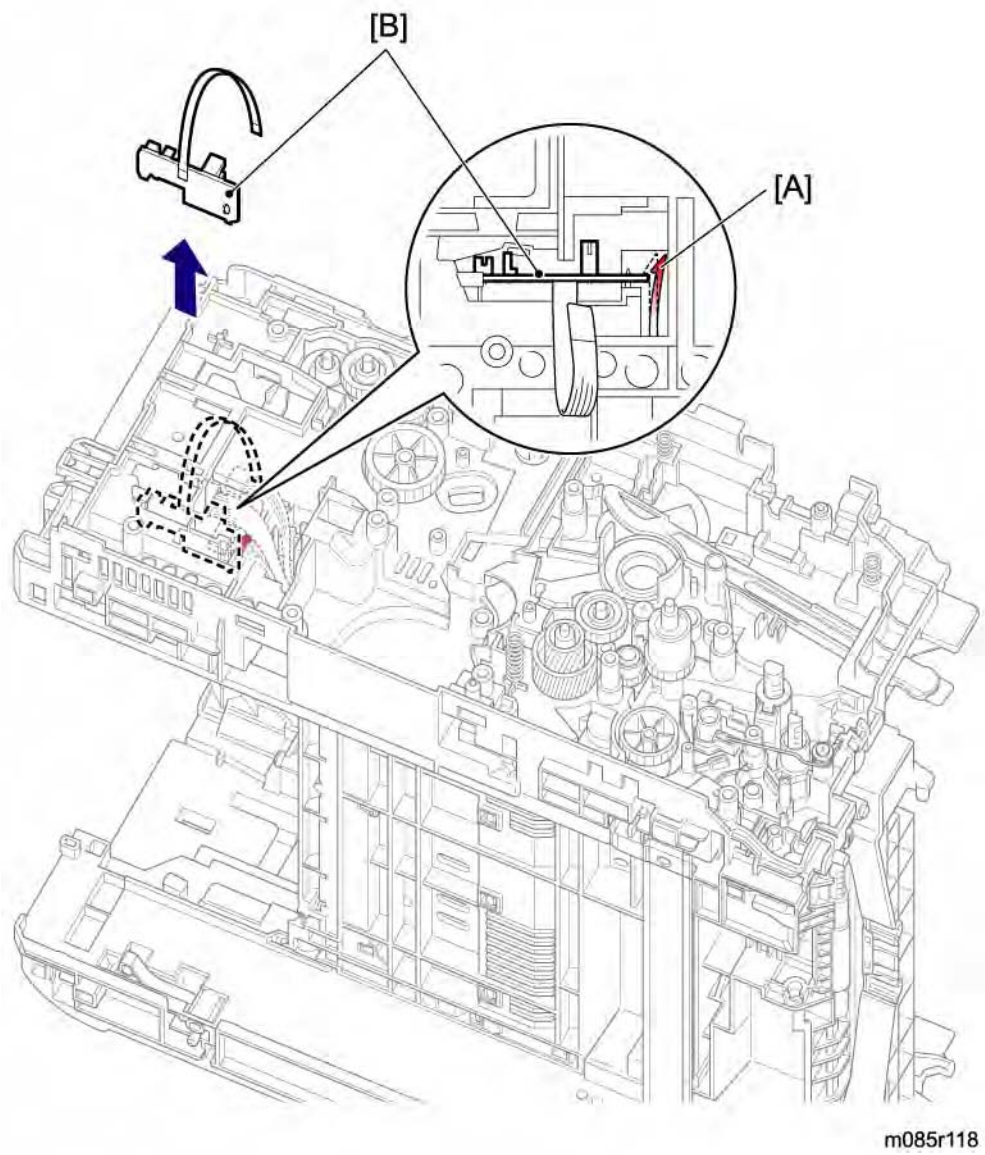
1. Remove the three Taptite bind B M3x10 screws [A], and then remove the FU front paper guide [B] from the Main body.



2. Remove the two Taptite cup S M3x6 SR screws [A], and then remove the Chute ground plate [B] from the Main body.

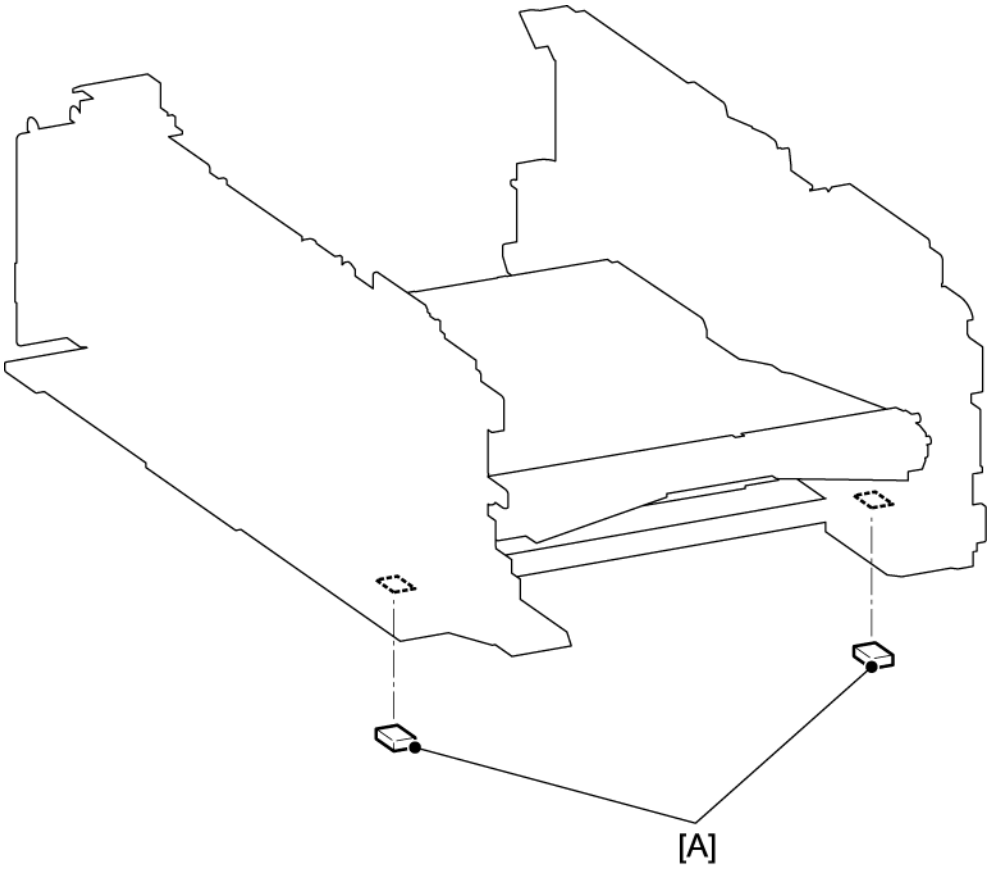


3. Remove the Main PCB sheet [A] from the Main shield plate [B].
4. Remove the three Taptite bind B M4x12 screws [C], and then remove the Main shield plate [B] from the Main body.



5. Release the Hook [A] to remove the Eject sensor PCB ASSY [B] from the Main body.

4.9.25 RUBBER FOOT



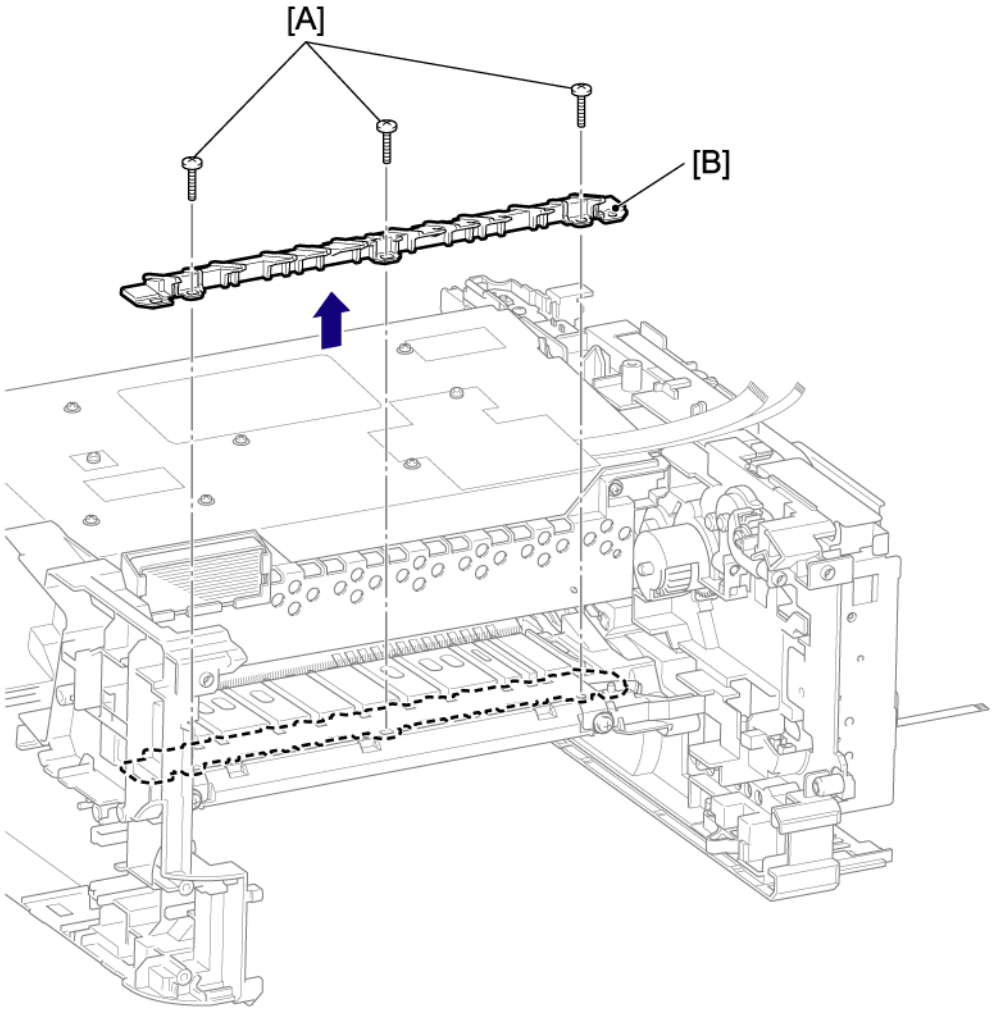
m085r119

1. Remove the two Rubber feet [A] from the Main body.

4.9.26 MAIN FRAME L ASSY

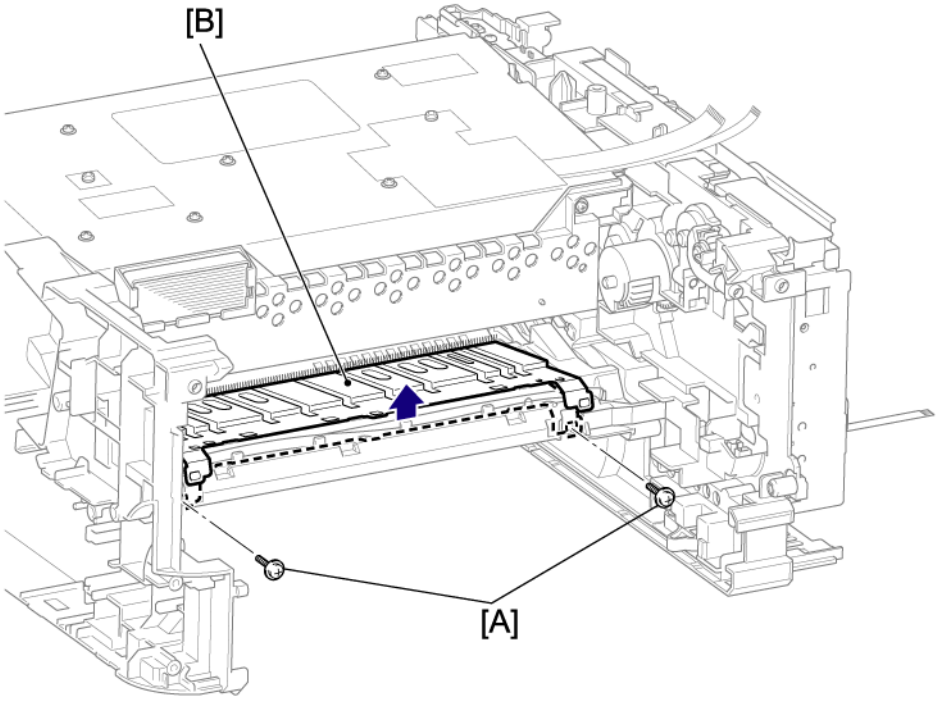
Note

- The procedure for disassembling the Main frame L ASSY as mentioned after ☛p.4-74 "High-Voltage PS PCB Assy" is described below.



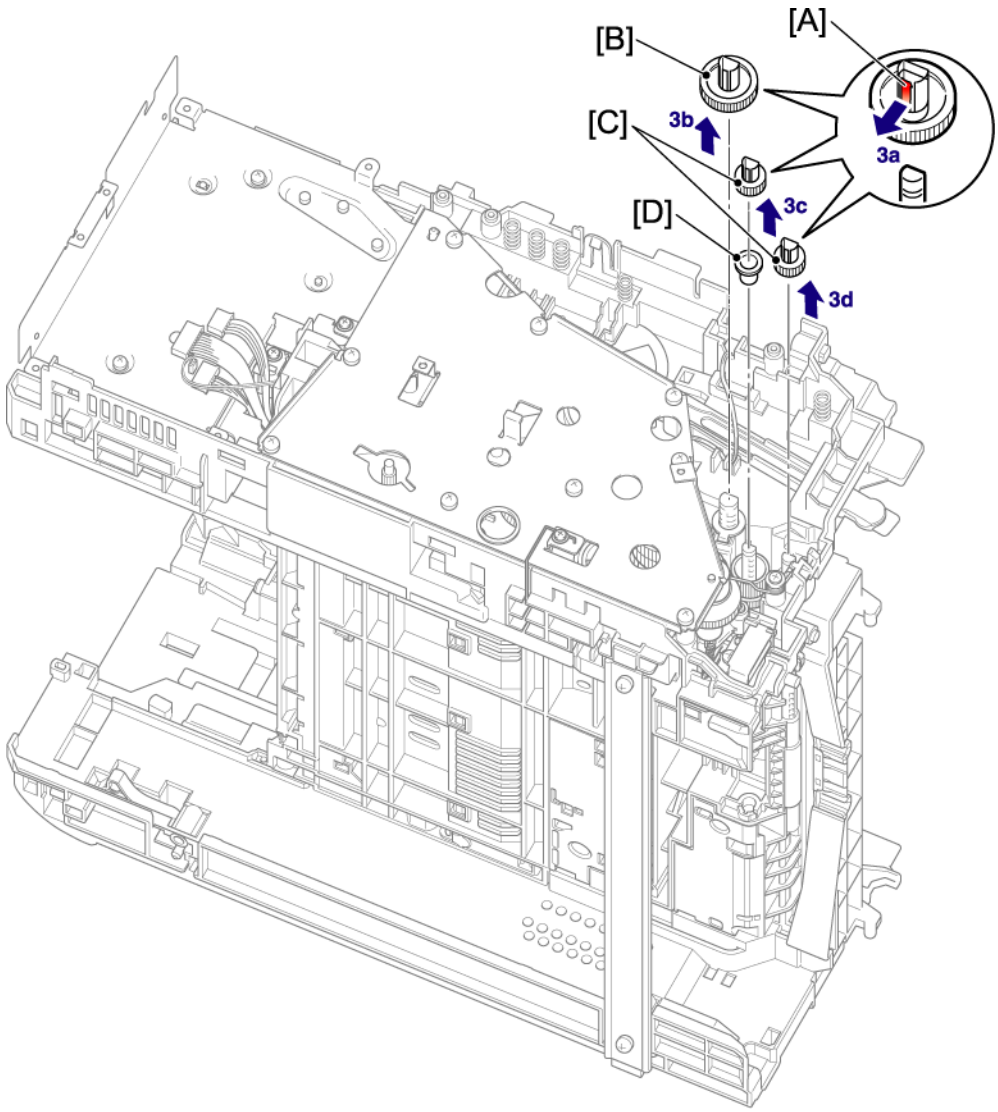
m085r120

1. Remove the three Taptite bind B M3x10 screws [A], and then remove the FU front paper guide [B] from the Main body.

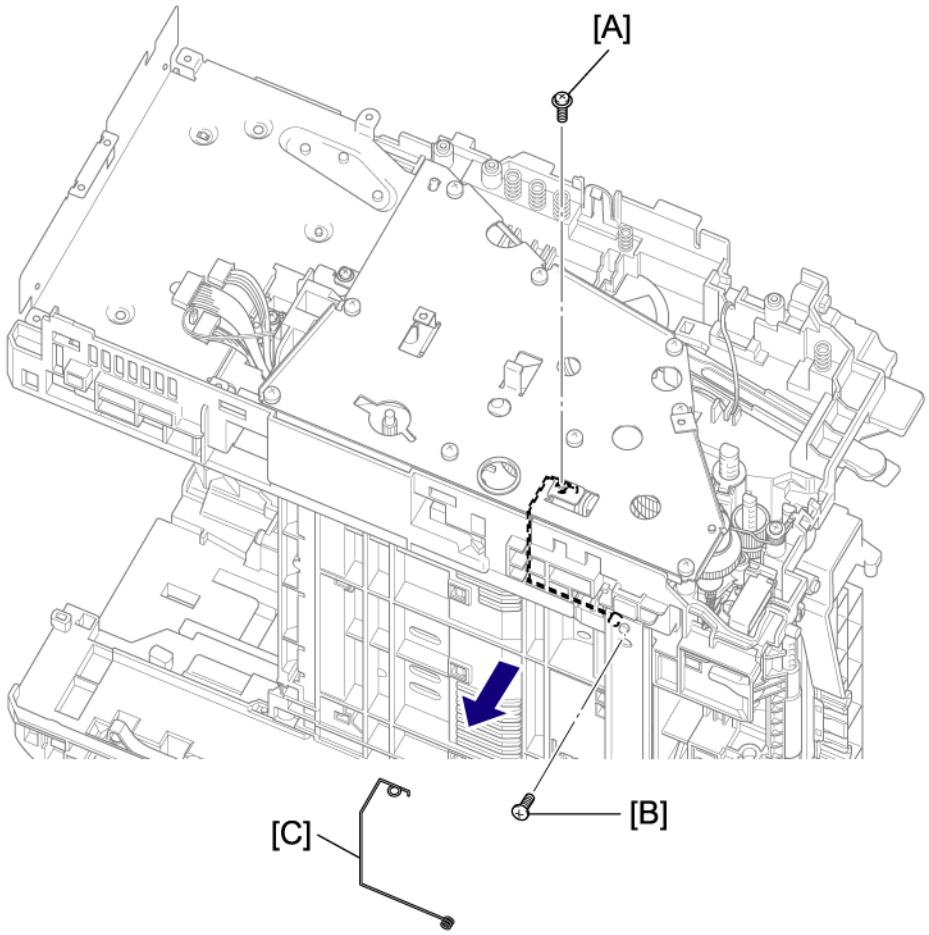


m085r121

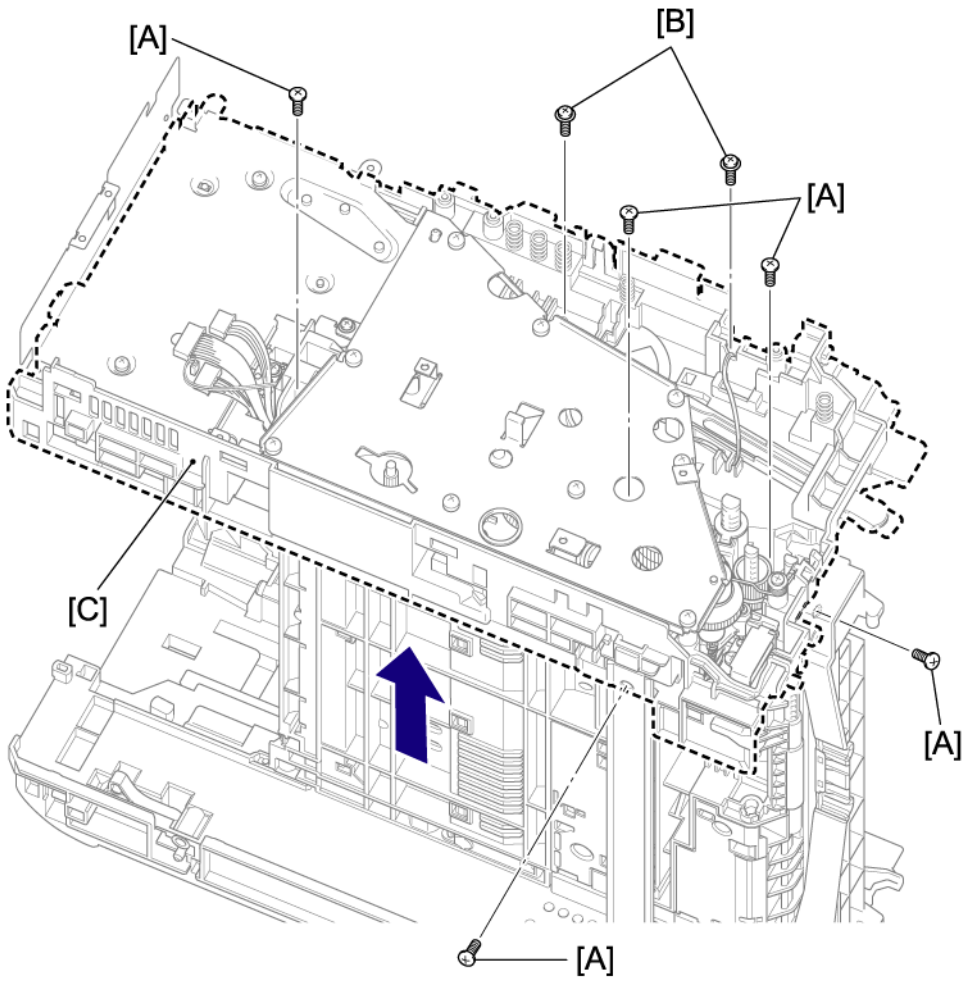
2. Remove the two Taptite cup S M3x6 SR screws [A], and then remove the Chute ground plate [B] from the Main body.



3. Release the Hook [A] to remove the Registration gear 25 terminal [B], the two Feeder gear 17 terminals [C] and the Bush 6 [D].



4. Remove the Taptite cup S M3x6 SR screw [A] and the Taptite bind B M4x12 screw [B] on the Main frame L ASSY, and then remove the Under FG wire [C] from the Main body.

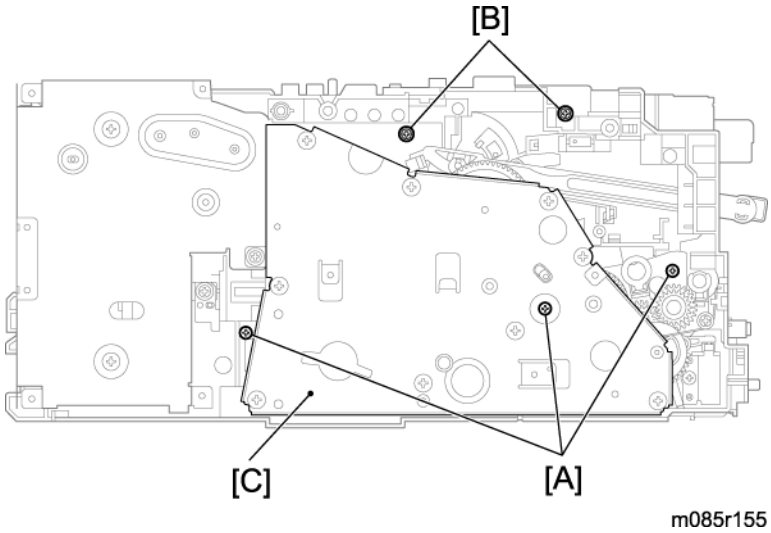


5. Remove the four Taptite bind B M4x12 screws [A] and the two Taptite cup S M3x6 SR screws [B], and then remove the Main frame L ASSY [C] from the Main body.

Note

- Ensure you remove the Main frame L ASSY [C] with the DEV joint link pulled out.

<Upper surface of Main frame L ASSY>



- [A]: Taptite bind B M4x12
- [B]: Taptite cup S M3x6 SR
- [C]: Drive sub ASSY

4.10 ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT

4.10.1 IF YOU REPLACE THE MAIN PCB

Note

- When replace the main PCB, the function of the I FAX disappears. Contact the customer to download the I FAX again.

<What to do when replacing the main PCB>

- EEPROM parameter initialization of main PCB (Maintenance mode: code 01)
- Operational check of control panel button (Maintenance mode: code 13)
- Operational check of sensors (Maintenance mode: code 32)
- Acquisition of white level data and set the CIS scanner area (Maintenance mode: code 55)
- EEPROM customizing of main PCB (Maintenance mode: code 74)
- Setting the serial number
- Inputting the adjusted value of the laser scanner

<What you need to prepare>

1. Computer (Windows® XP or later)
   Create folder, for example "ALL2" folder on the C drive.
2. BrUsbSn.exe file
   Copy it into the "ALL2" folder that has been created on the C drive. Extract the copied file and run "BrUsbSn.exe" file by double-clicking.
3. USB cable (one piece)
4. Maintenance USB Printer Driver
   Copy it into the "ALL2" folder that has been created on the C drive. Extract the copied file.

Installing the maintenance printer driver

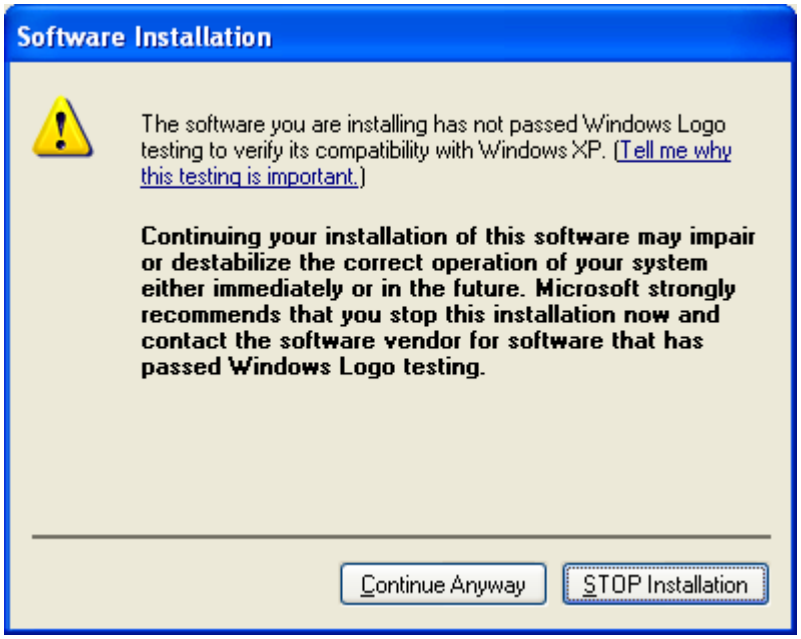
To identify terminals connected via USB interface, the PC requires the corresponding virtual USB devices to be implemented by the driver. If you connect a number of machines to your PC, the same number of virtual USB devices will be automatically configured on your PC. To prevent virtual USB devices from being configured limitlessly, use the unique driver installation procedure described below that enables your PC to identify terminals via single virtual USB device.

1. Check that the power switch of the machine is turned off. Disconnect the USB cable that connects the machine with PC.
2. Turn on your PC and machine.

3. Enter the maintenance mode.
4. Click the “DPInst.exe” of the Printer Maintenance Driver which has been copied in the “ALL2” folder to start.

Device Driver Installation Wizard
Welcome to the Device Driver Installation Wizard!
This wizard helps you install the software drivers that some computers devices need in order to work.
To continue, click Next.
< Back
Next >
Cancel

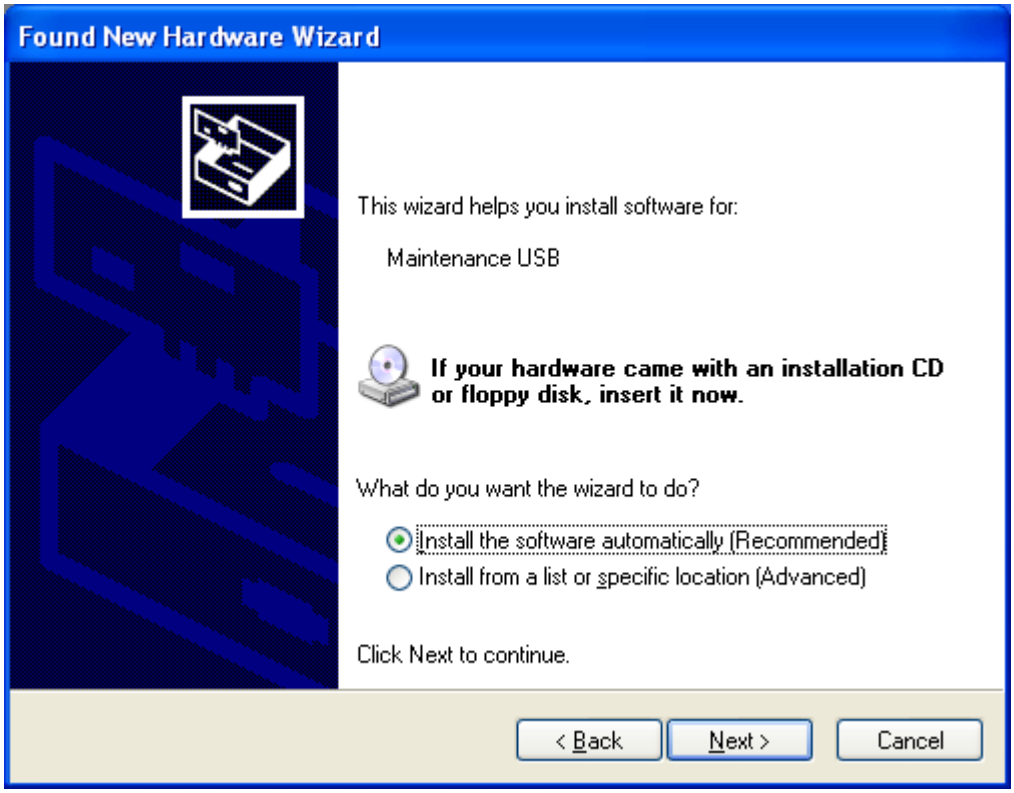
5. The screen above appears, indicating the detection of device installation wizard. Click Next to proceed.


Software Installation
The software you are installing has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

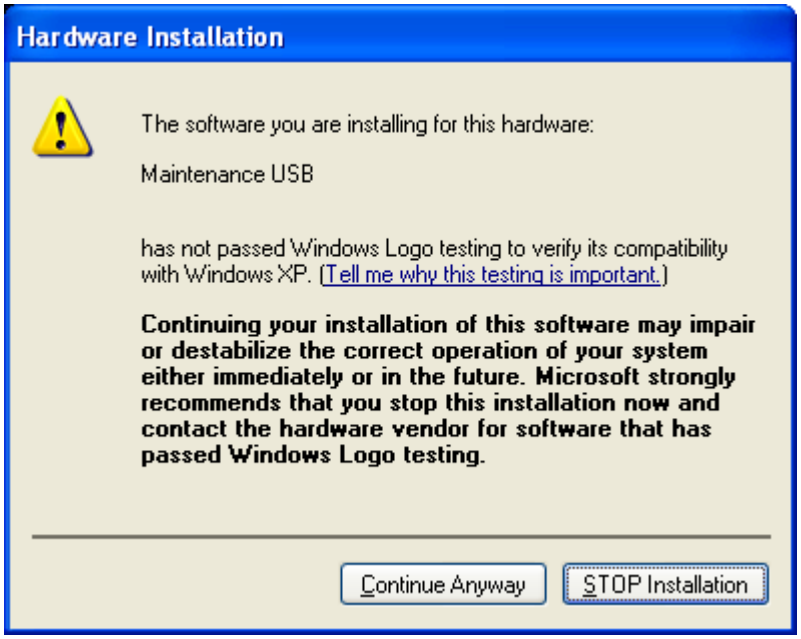
6. An alert warning message of WHQL appears three times. Click Continue Anyway to proceed.

Device Driver Installation Wizard
Completing the Device Driver Installation Wizard
The drivers were successfully installed on this computer.
You can now connect your device to this computer. If your device came with instructions, please read them first.
Driver Name
Status
Generic Maintenance Im...
Ready to use
Generic Maintenance P...
Ready to use
Generic Maintenance Pri...
Ready to use
< Back
Finish
Cancel

7. If the device driver is successfully installed, the screen above appears. Click Finish to return.
8. Connect the machine to your PC using the USB cable.


Found New Hardware Wizard
This wizard helps you install software for:
Maintenance USB
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

9. Select “Install the software automatically (Recommended)” and click Next.


Hardware Installation
The software you are installing for this hardware:
Maintenance USB
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

Found New Hardware Wizard
Please wait while the wizard installs the software...
Maintenance USB
Setting a system restore point and backing up old files in case your system needs to be restored in the future.
< Back
Next >
Cancel

10. An alert warning message of WHQL appears. Click Continue Anyway to proceed.

11. If the Maintenance USB Printer driver is successfully installed, the screen above appears. Click Finish to return.

EEPROM parameter initialization of main PCB (Maintenance mode: code 01)

Refer to p.5-4 "EEPROM Parameter Initialization (Function code 01, 91)", and perform the EEPROM parameter Initialization of main PCB.

EEPROM customizing of main PCB (Maintenance mode: code 74)

Refer to p.5-39 "EEPROM Customizing (Function code 74)", and perform the EEPROM Customizing.
For models in France and surrounding countries, Pan-Nordic, Oceania or Iberia, implement the setting for Code 74 in Maintenance mode first. Then, implement more detailed settings for Code 52.

Operational check of control panel button (Maintenance mode: code 13)

Refer to p.5-17 "Operational Check of Control Panel Button (Function code 13)", and perform the operational check of control panel PCB.

Operational check of sensors (Maintenance mode: code 32)

Refer to p.5-19 "Operational Check of Sensors (Function code 32)", and perform the operational check of sensors.

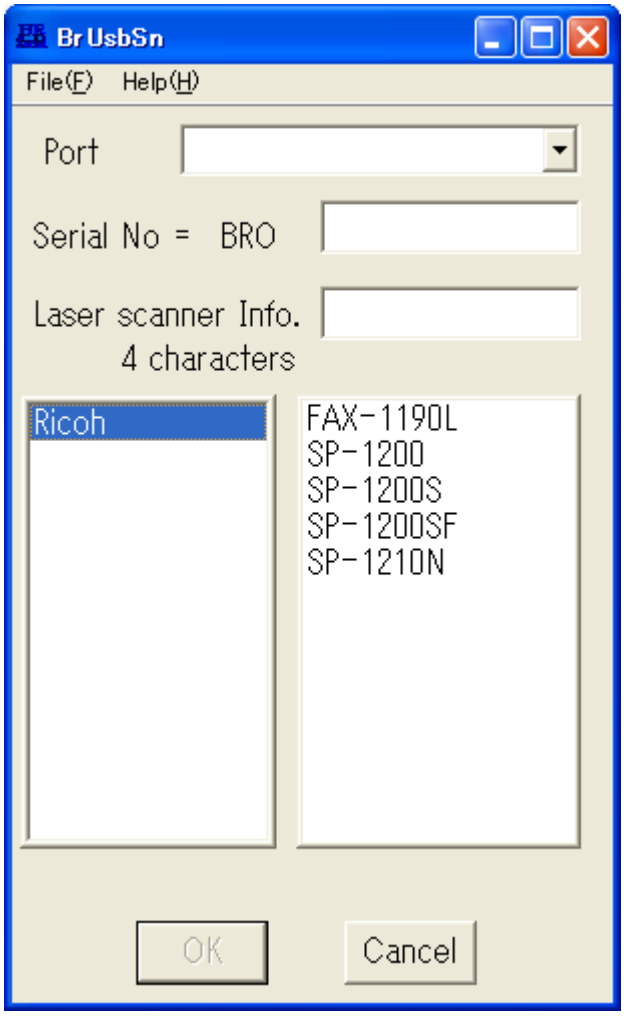
Acquisition of white level data and set the CIS scanner area (Maintenance mode: code 55)

Refer to p.5-38 "Acquisition of White Level Data (Function code 55)", and perform the acquisition of white level data and CIS scanner area setting.

Setting the serial number

<Procedures>

1. Connect the PC and machine with the USB cable.
2. Double-click the BrUsbSn.exe file which has been copied in the “ALL2” folder to start.

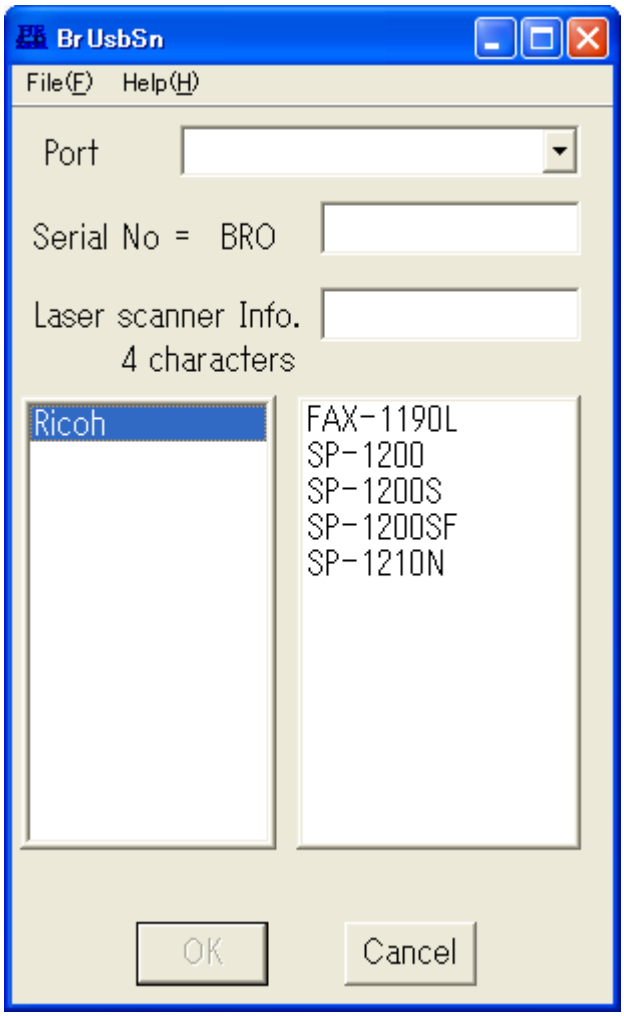


3. Click the “Ricoh” of the model menu.
4. In Port on the BrUsbSn screen, select the port number assigned to the Maintenance USB Printer. If the port number is unknown, check the Maintenance USB Printer Properties (☛p.4-125 "How to Select the Port Number").
5. Enter the serial number of the machine into the box on the “Serial No”.
6. Click the OK button. The serial number is written in the machine.

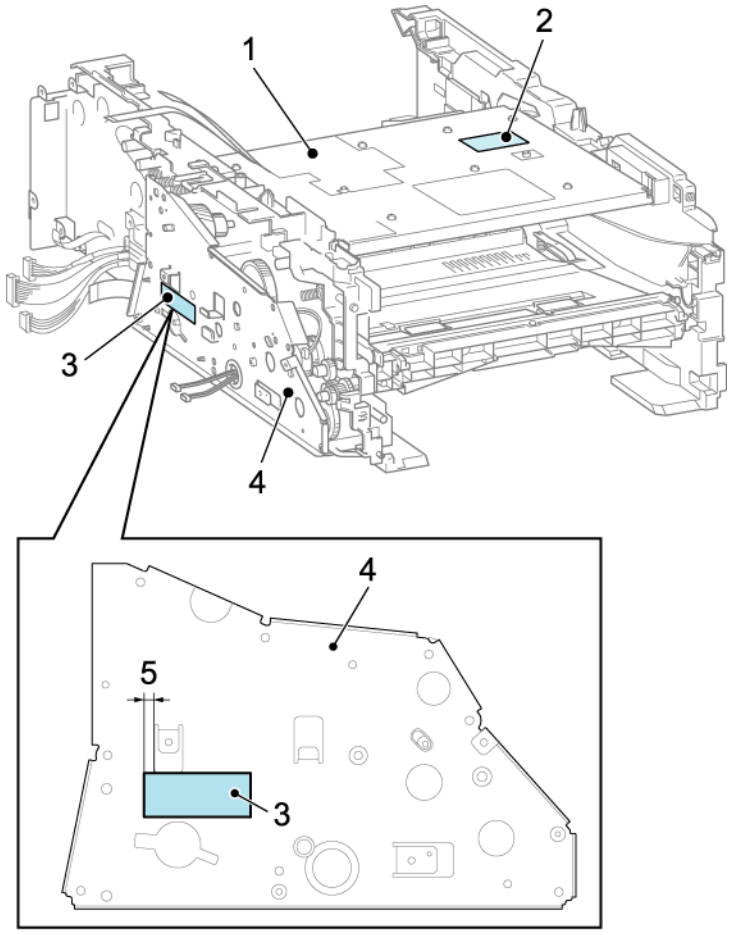
Inputting the adjusted value of the laser scanner

<Procedures>

1. Double-click the BrUsbSn.exe file to start.



2. Click the “Ricoh” of the model menu.
3. In Port on the BrUsbSn screen, select the port number assigned to the Maintenance USB Printer. If the port number is unknown, check the Maintenance USB Printer Properties (☛p.4-125 "How to Select the Port Number").
4. Enter the serial number into the box on the “Laser Scanner Info.” as shown below.
5. Click the OK button. The correction value of the laser unit is written in the machine.



m085r143

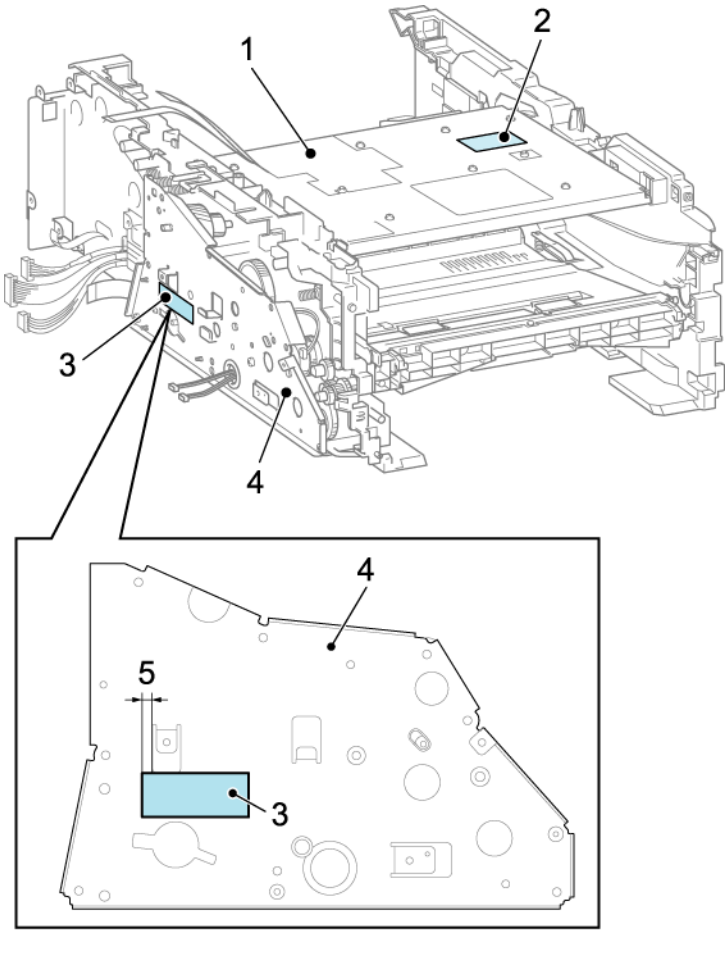
1. Laser unit
2. Laser serial label
3. Laser serial label
4. Drive sub ASSY
5. 2 to 10mm

4.10.2 IF YOU REPLACE THE LASER UNIT

Inputting the adjustment value of the laser unit

Note

- When replace the laser unit, attach the serial label with the provided the new laser unit to the driver sub ASSY.
- The input of following the correction value of the laser unit enter the serial label number with the provided the new laser unit.

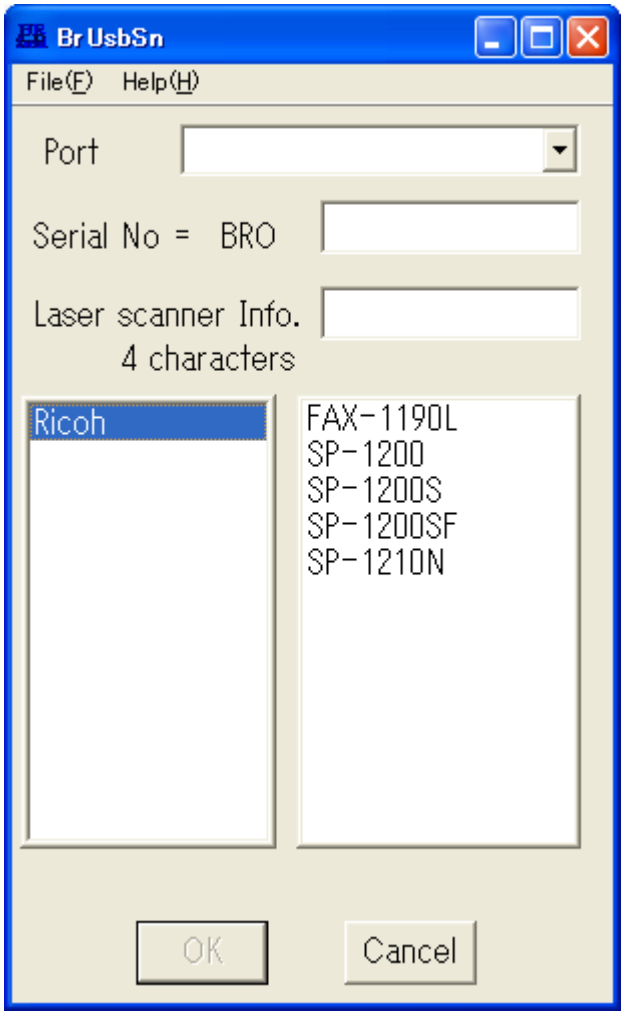


m085r143

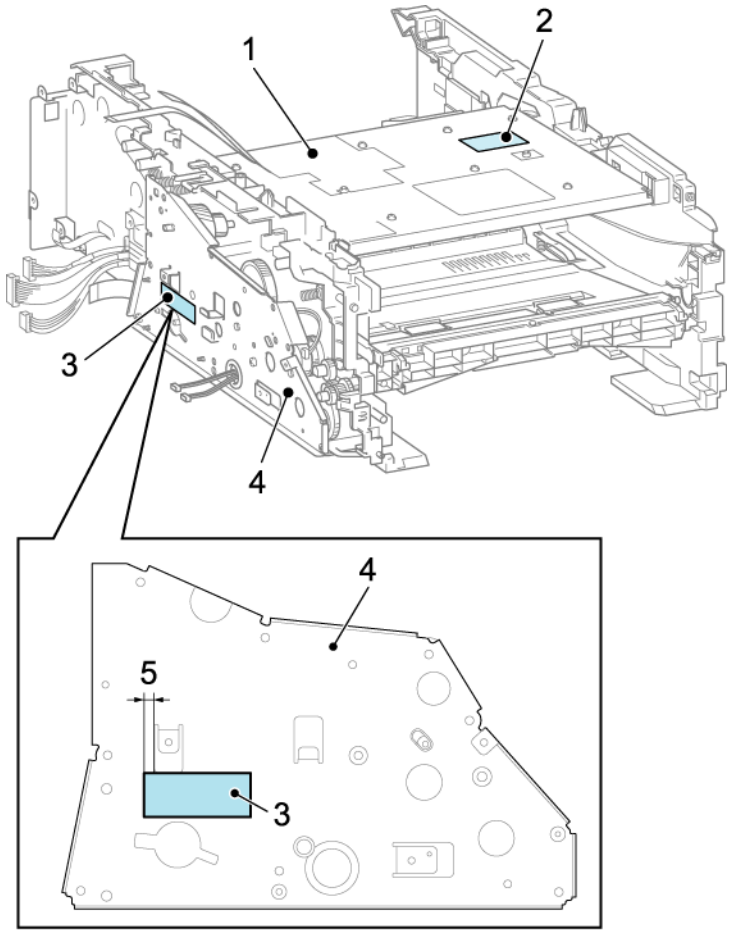
1. Laser unit
2. Laser serial label
3. Laser serial label
4. Drive sub ASSY
5. 2 to 10mm

<Procedures>

1. Double-click the BrUsbSn.exe file to start.



2. Click the “Ricoh” of the model menu.
3. In Port on the BrUsbSn screen, select the port number assigned to the Maintenance USB Printer. If the port number is unknown, check the Maintenance USB Printer Properties (☛p.4-125 "How to Select the Port Number").
4. Enter the serial number into the box on the “Laser Scanner Info.” as shown below.
5. Click the OK button. The corrected value of the laser unit is written in the machine.



m085r143

1. Laser unit
2. Laser serial label
3. Laser serial label
4. Drive sub ASSY
5. 2 to 10mm

4.10.3 IF YOU REPLACE THE FB UNIT

Acquisition of white level data and set the CIS scanner area

1. Enter the maintenance mode.
2. <M085>
   Press the 5 button twice.
   <M086/M104>
   Press the ▲ or ▼ button several times. "MAINTENANCE 55" appears on the LCD, and then press the OK button. "Press START" appears on the LCD.
3. Press the Start button.
   The white level data will be acquired automatically.
4. If the procedure is completed, the machine will automatically return to the initial stage of the maintenance mode.

4.10.4 HOW TO SELECT THE PORT NUMBER

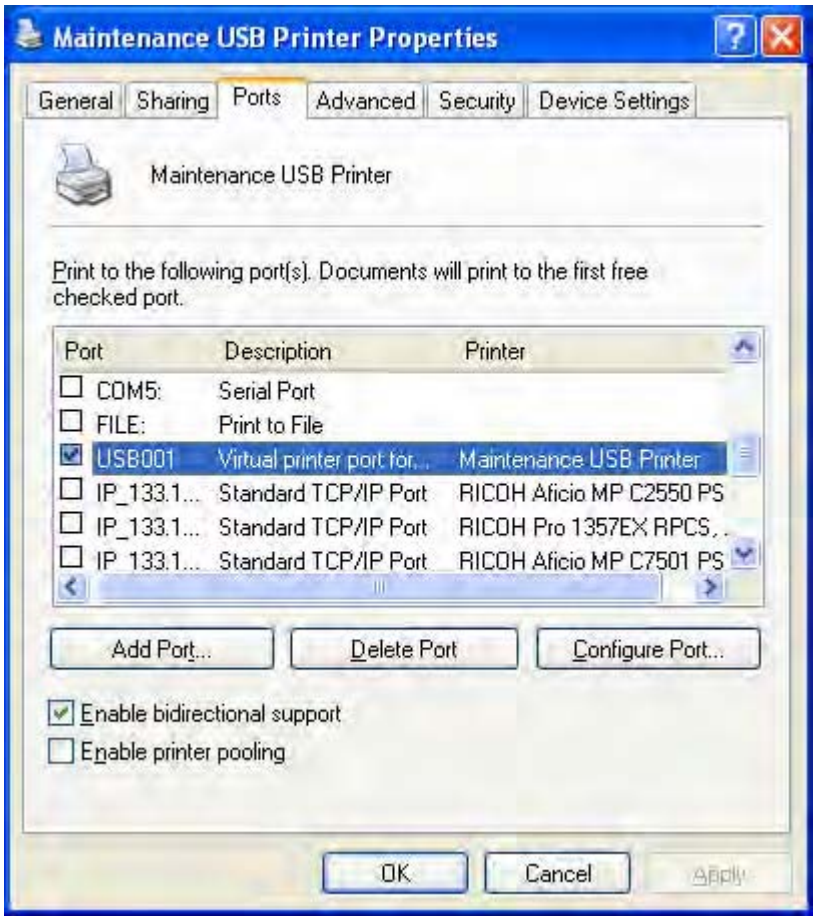
1. Click start | Printers and Faxes.

   The Printers window appears as shown below.

2. Right-click the Maintenance USB Printer icon.

3. Click Properties.

   The Maintenance USB Printer Properties window appears as shown below.



4. Click the Ports tab.

   In this example, the port number assigned to the Maintenance USB Printer is USB001.

⇒ 4.11 FIRMWARE INSTALLATION

Preparation

Download the below driver & firmware files and save them in an arbitrary folder in your PC (e.g., C:¥UPDATE)

- SP1200 Series Maintenance Driver
- Engine Firmware
- SP1200 Series filedg32.exe

Installing the SP1200 Series Maintenance Driver

IMPORTANT:

- Once this procedure is performed for a given PC, no more driver/software installations are required for that PC.
- Before you do this procedure, make sure that the files for the Maintenance USB Printer driver are already stored on the PC (Windows XP or later).

Installation Steps:

1. Make sure that both the Machine & PC are turned OFF & not connected to each other.
2. Turn “ON” the machine. Follow any of below steps to enter the maintenance mode.
   - Press the Menu and Start key. Now immediately press the ▲ key four times to make the machine enter the maintenance mode.

   OR

   - On the numerical keypad press the Menu, *, 2, 8, 6 and 4 keys in this sequence in a continuous & smooth manner.

CAUTION:

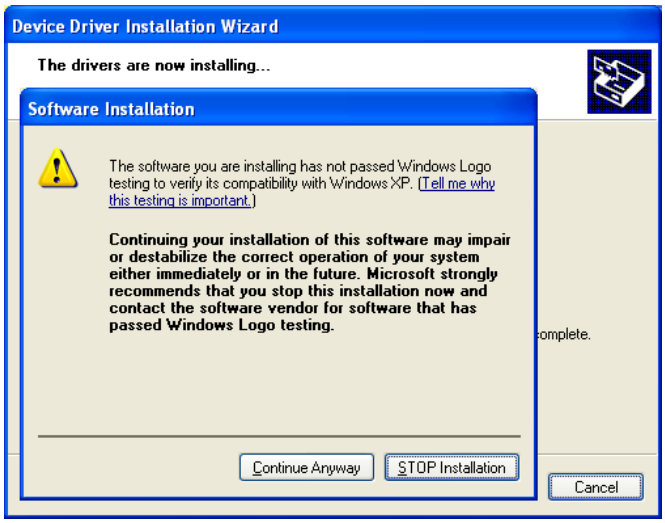
- If the pressing time gap between keys is long, the machine will EXIT by producing a “Boo” sound & return to Normal Mode.
- Leave the machine in “MAINTENANCE" mode until next instruction.

The machine will produce long beep & enter into “MAINTENANCE" mode. The LCD display will change as below.

3. Now turn on the PC & Run “DPInst.exe” in folder “SP1200 Series Maintenance Driver”.
4. When the following screen appears, click “Next” to proceed.

Device Driver Installation Wizard
Welcome to the Device Driver Installation Wizard!
This wizard helps you install the software drivers that some computers devices need in order to work.
To continue, click Next.
< Back
Next >
Cancel

5. A WHQL alert message will appear three times. Click “Continue Anyway” to proceed.


Device Driver Installation Wizard
The drivers are now installing...
Software Installation
The software you are installing has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation
Cancel

6. If the device driver was successfully installed, the following dialog appears.
   Note: The status of the three drivers will be displayed as “Ready to use”.
   Click “Finish”.

Device Driver Installation Wizard
Completing the Device Driver Installation Wizard
The drivers were successfully installed on this computer.
You can now connect your device to this computer. If your device came with instructions, please read them first.
Driver Name
Status
Generic Maintenance Im...
Ready to use
Generic Maintenance P...
Ready to use
Generic Maintenance Pri...
Ready to use
< Back
Finish
Cancel

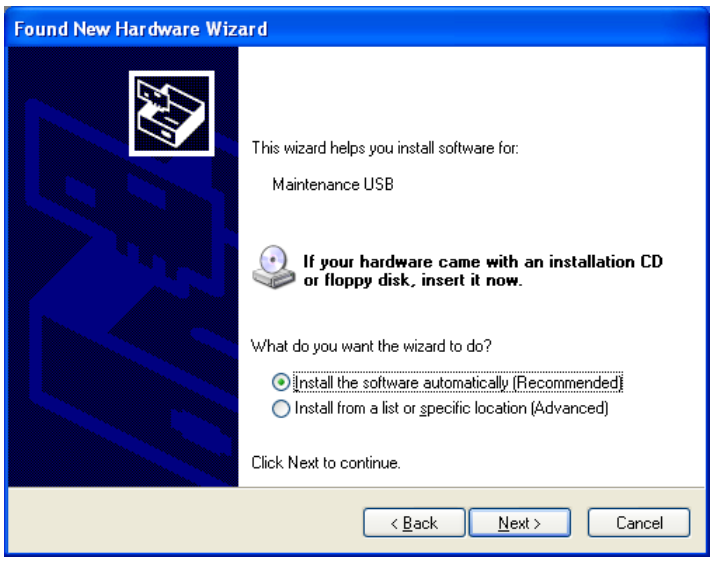
7. **Accessing the "Maintenance Mode"**

Connect the machine in Maintenance Mode (Step 2) to your PC using a USB cable.

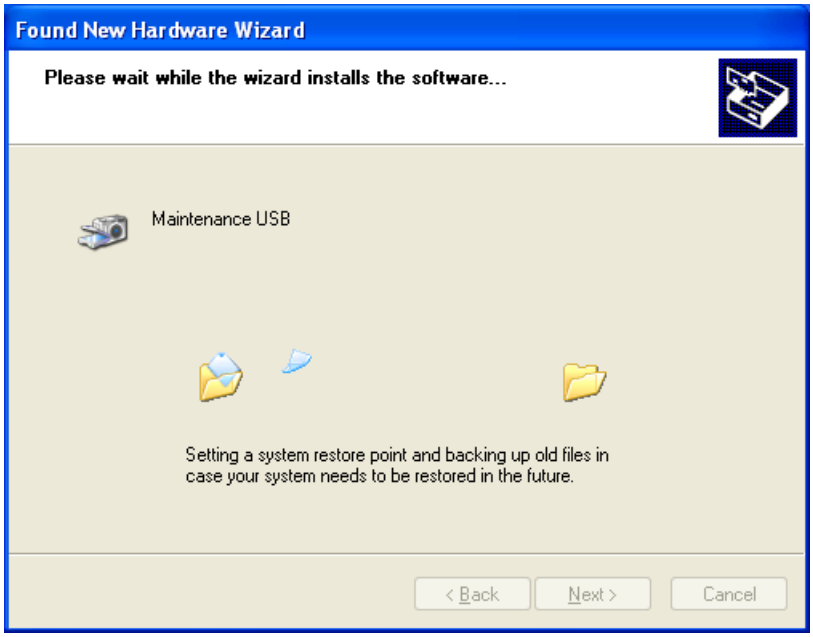
When the new hardware detection dialog appears, click "Next" to proceed.

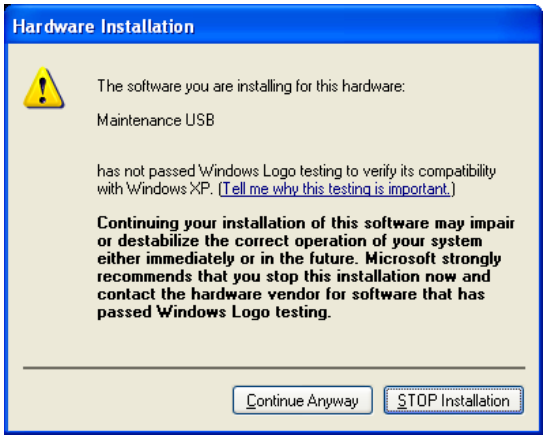
When the following dialog appears, select "Install the software automatically (Recommended)",

and then click "Next" to proceed.


Found New Hardware Wizard
This wizard helps you install software for:
Maintenance USB
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

8. When the WHQL alert message appears, click “Continue Anyway” to proceed.


Found New Hardware Wizard
Please wait while the wizard installs the software...
Maintenance USB
Setting a system restore point and backing up old files in case your system needs to be restored in the future.
< Back
Next >
Cancel

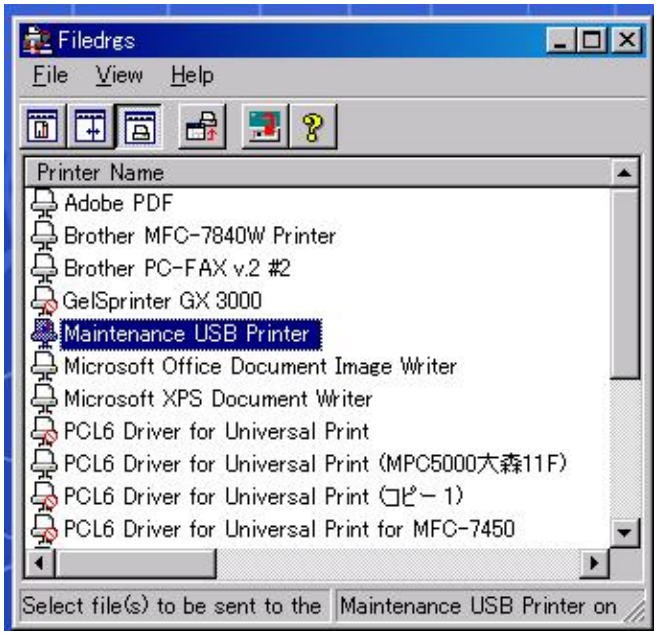

Hardware Installation
The software you are installing for this hardware:
Maintenance USB
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

9. If the Maintenance Printer Driver is successfully installed, the following dialog appears.
   Click “Finish”.
   Do above steps for all three drivers.

10. Now turn OFF the machine to exit Maintenance Mode.
11. **Accessing the " Firmware Download Mode "**
    Turn ON the machines while pressing the **5** key of the numerical keypad.
    The machine will enter into Firmware Download Mode & LCD display will change as below.

12. Run “SP1200_Series_filedg32.exe".

13. The Filedrgs window will appear.
    Select Maintenance Printer Driver in the Filedrgs window as below..
    Now Drag & Drop the Engine Firmware File onto the Filedrgs window.


Filedrgs
File View Help
Printer Name
Adobe PDF
Brother MFC-7840W Printer
Brother PC-FAX v.2 #2
GelSprinter GX 3000
Maintenance USB Printer
Microsoft Office Document Image Writer
Microsoft XPS Document Writer
PCL6 Driver for Universal Print
PCL6 Driver for Universal Print (MPC5000大森11F)
PCL6 Driver for Universal Print (コピー 1)
PCL6 Driver for Universal Print for MFC-7450
Select file(s) to be sent to the
Maintenance USB Printer on

14. While downloading the firmware the machine beeps intermittently.
    After few minutes upon completion, the machine automatically reboots and return to the standby state.

15. **Checking of the Firmware Version**
    Press the * and # keys at the same time when the machine is on standby
    The firmware version appears on the LCD.

16. Press STOP key to return to the Ready Mode.

SERVICE MAINTENANCE

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
1	10/11/2011	Maintenance mode

5. SERVICE MAINTENANCE

5.1 MAINTENANCE MODE

The maintenance mode is exclusively designed for the checking, setting and adjustment of the machine by using the buttons on the control panel. You can customize the EEPROM according to the shipment destination of the machine concerned. In addition, you can perform operational checks of the LCD, control panel PCB and sensors, perform a print test, display the log information and error codes, and modify worker switches (WSW).

5.1.1 HOW TO ENTER THE MAINTENANCE MODE

To enter maintenance mode in this machine.
Press the following keys within 2 seconds.

Or,

⇒ [**Menu/Set**] .. [**Start**] .. [^] .. [^] .. [^] .. [^]

After entering the maintenance mode, the machine beeps for approx. one second and displays "▮▮ MAINTENANCE ▮▮▮" on the LCD, indicating that it is placed in the initial stage of the maintenance mode, a mode in which the machine is ready to accept entry from the buttons.

Note

- In the case of the model with the numeric keys; To exit from the maintenance mode and switch to standby, press the 9 button twice in the initial stage of the maintenance mode. In the case of the model without the numeric keys; Press the ▲ or ▼ button. The "MAINTENANCE 99" appears on the LCD. Then press the OK button, and the machine returns to the standby state.
- Pressing the Stop/Exit button after entering only one digit restores the machine to the initial stage of the maintenance mode.
- If an invalid function code is entered, the machine beeps for one second and returns to the initial stage of the maintenance mode.

Service Maintenance

5.1.2 HOW TO ENTER THE END USER-ACCESSIBLE MAINTENANCE MODE

The maintenance-mode functions listed on the next section should be accessed by service personnel only. However, you can allow end users to access some of these under the guidance of service personnel by phone.

The end user-accessible functions are shaded in the table given on the next section. (codes 06, 09, 10, 11, 12, 25, 43, 53, 54, 80, 82, 87 and 91)

Function code 10 accesses the worker switches, each of which has eight selectors. You should not allow end users to access all of those selectors, but you can allow them to access user-accessible selectors which are shaded in the worker switch tables in p.5-50 "Worker Switch Settings (WSW)".

The service personnel should instruct the end users to follow the procedure given below.

1. Press in the following order the Menu, Start, Menu, and ▲ button. The "MAINTENANCE 06" appears on the LCD.
2. To access any other function code, call up the desired code using the ▲ and ▼ buttons or numerical buttons. Then press the OK button.

To switch the machine back to the standby state, press the Stop/Exit button. When each of the user-accessible functions is completed, the machine automatically returns to the standby state.

5.1.3 LIST OF MAINTENANCE-MODE FUNCTIONS

Function Code	Function	Reference Page
01	EEPROM Parameter Initialization	p.5-4
05	Printout of Scanning Compensation Data	p.5-5
06	Placement of CIS Unit Position for Transportation	p.5-7
08	ADF Performance Test	p.5-8
09	Test Pattern	p.5-9
10	Worker Switch (WSW) Setting	p.5-10
11	Printout of Worker Switch Data	p.5-15
12	Operational Check of LCD	p.5-16

Function Code	Function	Reference Page
13	Operational Check of Control Panel Button	p.5-17
25	ROM Version Check	p.5-18
32	Operational Check of Sensors	p.5-19
43	PC print function setting (PCL PS)	p.5-22
53	Received Data Transfer Function	p.5-32
54	Fine Adjustment of Scan Start/End Positions	p.5-35
55	Acquisition of White Level Data	p.5-38
67	Paper Feeding and Ejecting Test	p.5-38
74	EEPROM Customizing	p.5-39
78	Operational Check of Fans	p.5-42
80	Display of the Machine's Log	p.5-43
82	Error Code Indication	p.5-46
87	Output of Transmission Log to the Telephone Line	p.5-46
91	EEPROM Parameter Initialization	p.5-4
99	Exit from the Maintenance Mode	p.5-47

* The functions shaded in the table above are user-accessible.

5.1.4 DETAILED DESCRIPTION OF MAINTENANCE-MODE FUNCTIONS

EEPROM Parameter Initialization (Function code 01, 91)

<Function>

The machine initializes the parameter, user switches, worker switches and assurance mode switch settings registered in the EEPROM, to the initial values. Entering function code 01 initializes almost all of the EEPROM areas, but entering 91 does not initialize some areas, as listed below.

Data item	Function code 01	Function code 91
Maintenance-mode functions User switches Worker switch (☛p.5-50 "Worker Switch Settings (WSW)")	All of these will be initialized.	These will be initialized.
Remote activation code Registered message for cover page comment Forwarding / paging number, PIN number Outside line number Telephone function registration One-touch dialing Speed dialing Group dialing		These will not be initialized.

Note

- If you replace the main PCB with the one used for any other machine, carry out this procedure and then customize the EEPROM (☛p.5-39 "EEPROM Customizing (Function code 74)").

<Operating Procedure>

1. <M085>
   Press in order the 0 and 1 buttons (or the 9 and 1 buttons according to your need) in the initial stage of the maintenance mode.
   <M086/M104>
   Press the ▲ or ▼ button. "MAINTENANCE 01" or "MAINTENANCE 91" appears on the LCD, and then press the OK button.
   The "PARAMETER INIT" will appear on the LCD.
2. Upon completion of parameter initialization, the machine beeps for one second and returns to the initial stage of the maintenance mode.

Note

- When turn power supply of the machine off after upon completion of EEPROM parameter initialization, turn off after waiting more than three seconds after returns to the initial stage of the maintenance mode.

Printout of Scanning Compensation Data (Function code 05)

<Function>

The machine prints out the black and white level data for scanning compensation.

<Operating Procedure>

Do not start this function merely after powering on the machine but start it after carrying out a sequence of scanning operation. Unless the machine has carried out any scanning operation, this function cannot print out correct scanning compensation data. This is because at the start of scanning operation, the machine initializes black and white level data and takes in the scanning compensation reference data.

1. Take a black and white copy.
2. <M085>
   Press in order the 0 and 5 buttons in the initial stage of the maintenance mode.
   <M086/M104>
   Press the ▲ or ▼ button. "MAINTENANCE 05" appears on the LCD, and then press the OK button.
   The "PRINTING" will appear on the LCD.
3. The machine prints out the scanning compensation data list containing the following:
   Black and white scanning
   a) LED PWM data: 1Byte
   b) LED pulse data (G): 2Byte
   c) REFH (PWM) data: 1Byte
   d) Background color compensated data: 1Byte
   e) Black level data: Depends on the number of pixels of the previous scanning

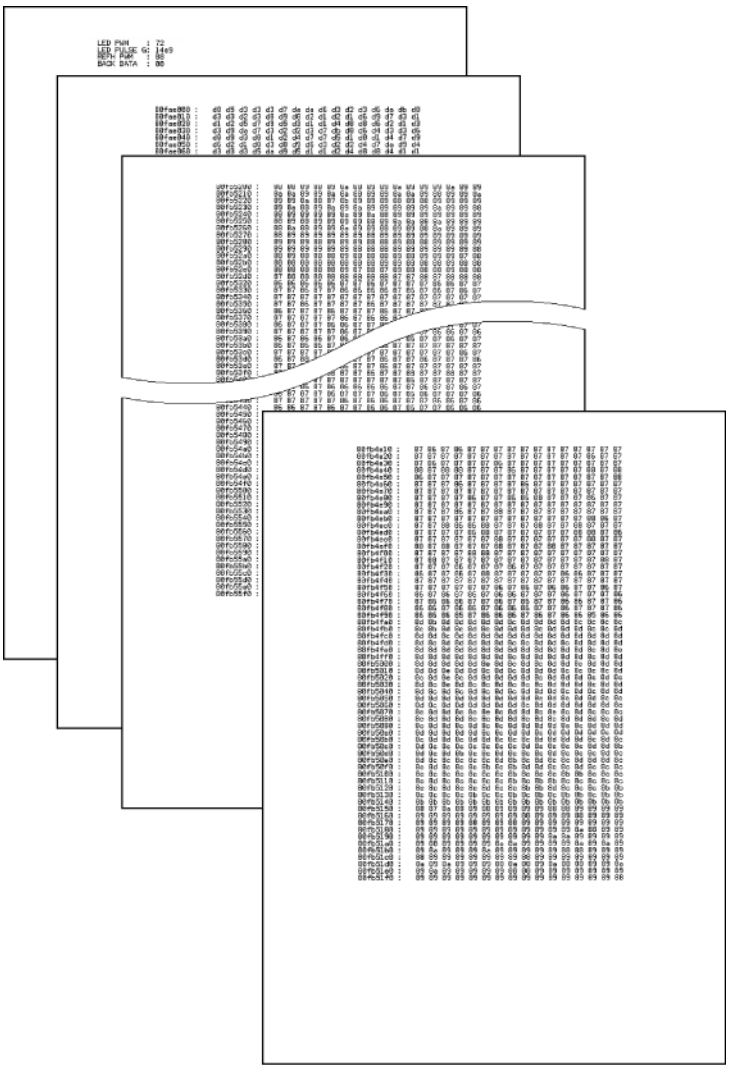
f) White level data: Depends on the number of pixels of the previous scanning

4. Upon completion of recording of the compensation data list, the machine beeps for one second and returns to the initial stage of the maintenance mode.

Note

- If an incorrect value is found, the machine prints out the data with the reversal format (white on black).

Print sample



m085s004

Placement of CIS Unit in Position for Transportation (Function code 06)

<Function>

This function is to move the CIS unit in position for transportation located at the left end. When you fix the machine and check its operation, you need to perform this function last before packing and shipping.

Note

- Please instruct end users to perform this function if possible before packing and shipping their FAX machine to a sales agent or a service dealer for the purpose of repair. (For the procedure to allow users to perform maintenance modes, refer to p.5-2 "How to Enter the End User-accessible Maintenance Mode".)

<Operating Procedure>

1. <M085 >

   Press in order the 0 and 6 buttons in the initial stage of the maintenance mode.

   <M086/M104>

   Press the ▲ or ▼ button. "MAINTENANCE 06" appears on the LCD, and then press the OK button.

   The CIS unit moves to the designated position for transportation located at the left side. The "MAINTENANCE 06" is displayed until the CIS unit is placed in position. When the scanner unit is placed in the position, the "SCAN LOCK" appears on the LCD.

2. Press the Stop/Exit button. The machine beeps for one second and returns to the initial stage of the maintenance mode.

Note

- If it is impossible to move the CIS unit in position for transportation, or if this function is performed while a scanning error is occurring, the "SCAN LOCK ERROR" appears on the LCD.

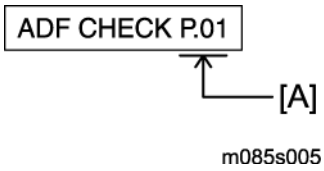
ADF Performance Test (Function code 08)

<Function>

The machine counts the documents fed by the automatic document feeder (ADF) and displays the count on the LCD for checking of the ADF performance.

<Operating Procedure>

1. Set documents. (Allowable up to the ADF capacity.)
   The "DOC. READY" will appear on the LCD.
2. <M085>
   Press in order the 0 and 8 buttons.
   <M086/M104>
   Press the ▲ or ▼ button. "MAINTENANCE 08" appears on the LCD, and then press the OK button.
   While counting the documents, the machine feeds them in and out, displaying the current count on the LCD as shown below.



m085s005

   - [A]: Current count (1st page in this example)
3. Press the Stop/Exit button so that the machine beeps for one second and returns to the initial stage of the maintenance mode.

Test Pattern (Function code 09)

<Function>

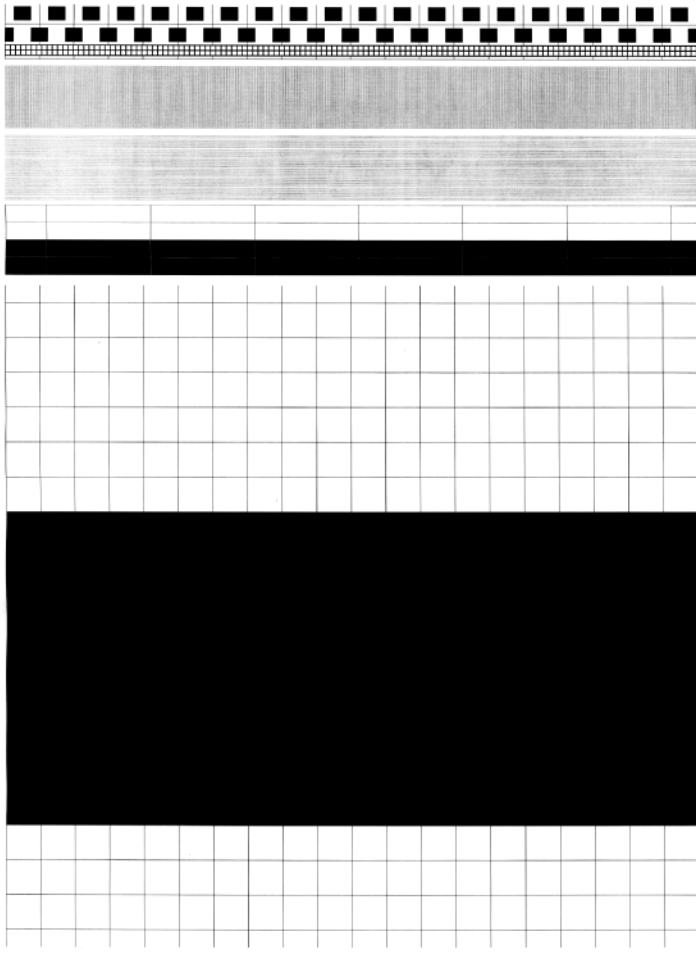
This function prints out a test pattern (Print Quality Check sheet) to allow the service personnel to check the print quality.

When there is problem in the print quality, this function use to carve up whether there is the cause in the recording side or the reading side.

<Operating Procedure>

1. <M085 >
   Press in order the 0 and 9 buttons in the initial stage of the maintenance mode.
   <M086/M104>
   Press the ▲ or ▼ button. "MAINTENANCE 09" appears on the LCD, and then press the OK button.
2. The machine starts printing a test pattern. Upon completion of printing, the machine beeps for one second and returns to the initial stage of the maintenance mode.

The figure below shows a test pattern that is printed.



m085s006

Worker Switch Setting (Function code 10)

<Function>

The machine incorporates the following worker switch functions which may be activated with the procedures using the control panel buttons. The worker switches have been set at the factory in conformity to the communications standards and codes of each country. Do not adjust them unless necessary. Some worker switches may not be applicable in some versions. The worker switch data list indicates "Not used." for those inapplicable switches.

*** Details of Worker switches**

The details of the worker switches are described in p.5-50 "Worker Switch Settings (WSW)" in which the user-accessible selectors of the worker switches are shaded.

Worker Switches

WSW No.	Function	Reference Page
WSW01	Dial pulse setting	p.5-54
WSW02	Tone signal setting	p.5-56
WSW03	PABX mode setting	p.5-57
WSW04	TRANSFER facility setting	p.5-59
WSW05	1st dial tone and busy tone detection	p.5-60
WSW06	Redial/Pause button setting and 2nd dial tone detection	p.5-62
WSW07	Dial tone setting 1	p.5-65
WSW08	Dial tone setting 2	p.5-67
WSW09	Protocol definition 1	p.5-68
WSW10	Protocol definition 2	p.5-70
WSW11	Busy tone setting	p.5-71
WSW12	Signal detection condition setting	p.5-72
WSW13	Modem setting	p.5-74
WSW14	AUTO ANS facility setting	p.5-75

WSW15	REDIAL facility setting	p.5-76
WSW16	Function setting 1	p.5-77
WSW17	Function setting 2	p.5-78
WSW18	Function setting 3	p.5-79
WSW19	Transmission speed setting	p.5-80
WSW20	Overseas communications mode setting	p.5-81
WSW21	TAD setting 1	p.5-82
WSW22	ECM and call waiting caller ID	p.5-83
WSW23	Communications setting	p.5-84
WSW24	TAD setting 2	p.5-86
WSW25	TAD setting 3	p.5-87
WSW26	Function setting 4	p.5-88
WSW27	Function setting 5	p.5-90
WSW28	Function setting 6	p.5-91
WSW29	Not used	-
WSW30	Function setting 8	p.5-92
WSW31	Function setting 9	p.5-93
WSW32	Function setting 10	p.5-94
WSW33	Function setting 11	p.5-94
WSW34	Function setting 12	p.5-95
WSW35	Not used	-
WSW36	Function setting 14	p.5-96

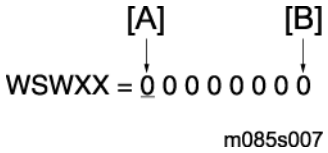
WSW37	Function setting 15	p.5-97
WSW38	V.34 transmission settings	p.5-98
WSW39	V.34 transmission speed	p.5-100
WSW40	Not used	-
WSW41	Not used	-
WSW42	Internet mail settings	p.5-101
WSW43	Function setting 21	p.5-102
WSW44	Not used	-
WSW45	Not used	-
WSW46	Not used	-
WSW47	Switching between high- and full-speed USB	p.5-103
WSW48	Not used	-
WSW49	End-of-copying beep and print in black	p.5-104
WSW50	Not used	-
WSW51	Function setting 16	p.5-105
WSW52	Not used	-
WSW53	Function setting 18	p.5-105
WSW54	Function setting 19	p.5-106
WSW55	Function setting 20	p.5-107
WSW56	Function setting 21	p.5-108
WSW57	Not used	-
WSW58	Function setting 23	p.5-108

WSW59	Function setting 24	p.5-109
WSW60	Not used	-
WSW61	Not used	-
WSW62	Not used	-
WSW63	Not used	-

<Operating Procedure>

<M085>

1. Press in order the 1 and 0 buttons in the initial stage of the maintenance mode.
   The machine displays the "WSW00" on the LCD and becomes ready to accept a firmware switch number.
2. Enter the desired number from the firmware switch numbers (01 through 63).
   The following appears on the LCD:



m085s007

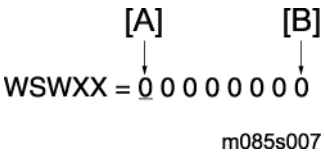
   - [A]: Selector 1
   - [B]: Selector 8
3. Use the ◄ and ► buttons to move the cursor to the selector position to be modified.
4. Enter a value to be set (0 or 1) using the 0 and 1 buttons.
5. Press the OK button. This operation saves the newly entered selector values onto the EEPROM and readies the machine for accepting a firmware switch number.
6. Repeat steps (2) through (5) until the modification for the desired firmware switches is completed.
7. Press the Stop/Exit button to return the machine to the initial stage of the maintenance mode.

Note

- To cancel this operation and return the machine to the initial stage of the maintenance mode during the above procedure, press the Stop/Exit button.
- If there is a pause of more than one minute after a single-digit number is entered for double-digit firmware switch numbers, the machine will automatically return to the initial stage of the maintenance mode.

<M086/M104>

1. Press the ▲ or ▼ button several times. The machine displays the "MAINTENANCE 10" on the LCD and becomes ready to accept a firmware switch number.
2. Press the ▲ or ▼ button several times. The machine displays that the desired number from the firmware switch numbers (01 through 63), and the press the OK key.
   The following appears on the LCD:



m085s007

   - [A]: Selector 1
   - [B]: Selector 8
3. If press the ▲ button, it is changed to "1". And press the ▼ button, it is changed to "0" in the state that the cursor is displayed the selector 1. And then the cursor moves to the selector 2. Change the firmware switch in the arbitrary value by this method.
4. If enter all selectors, press the OK button. This operation saves the newly entered selector values onto the EEPROM and readies the machine for accepting a firmware switch number.
5. Repeat steps (2) through (4) until the modification for the desired firmware switches is completed.
6. Press the Stop/Exit button to return the machine to the initial stage of the maintenance mode.

Note

- To cancel this operation and return the machine to the initial stage of the maintenance mode during the above procedure, press the Stop/Exit button.

Details of Firmware Switches

The details of the firmware switches are described in p.5-50 "Worker Switch Settings (WSW)" in which the user-accessible selectors of the firmware switches are shaded.

Printout of Worker Switch Setting (Function code 11)

<Function>

The machine prints out the setting items and contents specified by the worker switches.

<Operating Procedure>

1. <M085>

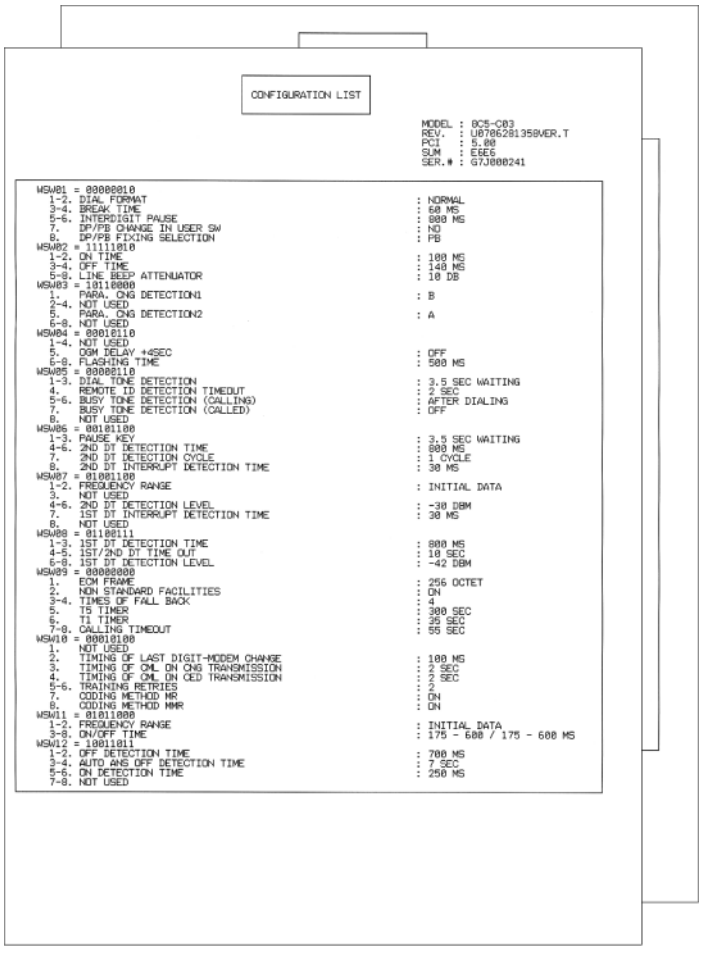
   Press the 1 button twice in the initial stage of the maintenance mode.

   <M086/M104>

   Press the ▲ or ▼ button. "MAINTENANCE 11" appears on the LCD, and then press the OK button.

   "PRINTING" will appear on the LCD.

2. The machine prints out the configuration list as shown in the figure below.
3. Upon completion of printing, the machine beeps for one second and returns to the initial stage of the maintenance mode.


CONFIGURATION LIST
MODEL : BC5-C03
REV. : UB706281350VER.T
PCI : 5.00
SUM : E8E6
SER.# : G7J000241
WSW01 = 00000010
1-2. DIAL FORMAT : NORMAL
3-4. BREAK TIME : 60 MS
5-6. INTERDIGIT PAUSE : 000 MS
7. DP/PB CHANGE IN USER SW : NO
8. DP/PB FIXING SELECTION : PB
WSW02 = 11111010
1-2. ON TIME : 100 MS
3-4. OFF TIME : 140 MS
5-8. LINE BEEP ATTENUATOR : 10 DB
WSW03 = 10110000
1. PARA. CNG DETECTION1 : B
2-4. NOT USED
5. PARA. CNG DETECTION2 : A
6-8. NOT USED
WSW04 = 00010110
1-4. NOT USED
5. DGM DELAY +4SEC : OFF
6-8. FLASHING TIME : 500 MS
WSW05 = 00000110
1-3. DIAL TONE DETECTION : 3.5 SEC WAITING
4. REMOTE ID DETECTION TIMEOUT : 2 SEC
5-6. BUSY TONE DETECTION (CALLING) : AFTER DIALING
7. BUSY TONE DETECTION (CALLED) : OFF
8. NOT USED
WSW06 = 00101100
1-3. PAUSE KEY : 3.5 SEC WAITING
4-6. 2ND DT DETECTION TIME : 800 MS
7. 2ND DT DETECTION CYCLE : 1 CYCLE
8. 2ND DT INTERRUPT DETECTION TIME : 30 MS
WSW07 = 01001100
1-2. FREQUENCY RANGE : INITIAL DATA
3. NOT USED
4-6. 2ND DT DETECTION LEVEL : -30 DBM
7. 1ST DT INTERRUPT DETECTION TIME : 30 MS
8. NOT USED
WSW08 = 01100111
1-3. 1ST DT DETECTION TIME : 800 MS
4-5. 1ST/2ND DT TIME OUT : 10 SEC
6-8. 1ST DT DETECTION LEVEL : -42 DBM
WSW09 = 00000000
1. ECM FRAME : 256 OCTET
2. NON STANDARD FACILITIES : ON
3-4. TIMES OF FALL BACK : 4
5. T5 TIMER : 300 SEC
6. T1 TIMER : 35 SEC
7-8. CALLING TIMEOUT : 55 SEC
WSW10 = 00010100
1. NOT USED
2. TIMING OF LAST DIGIT-MODEM CHANGE : 100 MS
3. TIMING OF CML ON CNG TRANSMISSION : 2 SEC
4. TIMING OF CML ON CED TRANSMISSION : 2 SEC
5-6. TRAINING RETRIES : 2
7. CODING METHOD MR : ON
8. CODING METHOD MMR : ON
WSW11 = 01011000
1-2. FREQUENCY RANGE : INITIAL DATA
3-8. ON/OFF TIME : 175 - 600 / 175 - 600 MS
WSW12 = 10011011
1-2. OFF DETECTION TIME : 700 MS
3-4. AUTO ANS OFF DETECTION TIME : 7 SEC
5-6. ON DETECTION TIME : 250 MS
7-8. NOT USED

m085s009

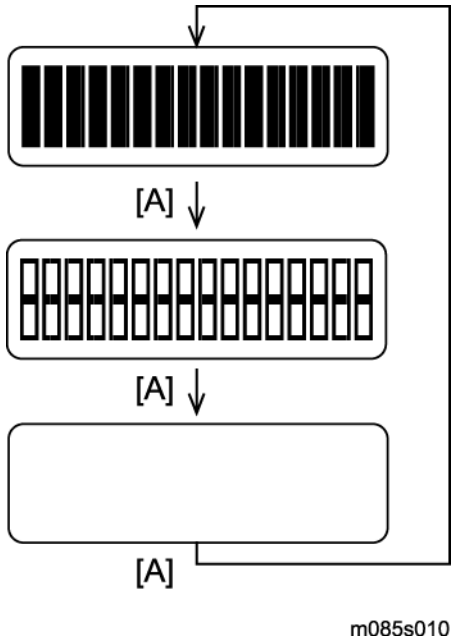
Operational Check of LCD (Function code 12)

<Function>

This function allows you to check whether the LCD on the control panel works normally.

<Operating Procedure>

1. <M085>
   Press in order the 1 and 2 buttons in the initial stage of the maintenance mode.
   <M086/M104>
   Press the ▲ or ▼ button. "MAINTENANCE 12" appears on the LCD, and then press the OK button.
   The LCD shows.
2. Press the Start button. Each time you press the Start button, the LCD cycles through the displays shown below.
3. Press the Stop/Exit button in any process of the above display cycle. The machine beeps for one second and returns to the initial stage of the maintenance mode.



m085s010

- [A]: Start button

Operational Check of Control Panel Button (Function code 13)

<Function>

This function allows you to check the control panel button for normal operation.

<Operating Procedure>

1. <M085>

   Press in order the 1 and 3 buttons in the initial stage of the maintenance mode.

   <M086/M104>

   Press the ▲ or ▼ button. "MAINTENANCE 13" appears on the LCD, and then press the OK button.

   The machine displays "00" on the LCD.

2. Press the buttons in the order designated in the illustration shown below.

   The LCD shows the corresponding number in decimal notation each time a button is pressed. Check that the displayed number is correct by referring to the illustration below.

   If a button is pressed out of order, the machine displays the "INVALID OPERATE" on the LCD. To return to the status ready to accept button entry for operational check, press the Stop/Exit button.

3. After the last number button is pressed, the machine beeps for one second and returns to the initial stage of the maintenance mode.

   To terminate this operation, press the Stop/Exit button. The machine beeps for one second and returns to the initial stage of the maintenance mode.

M085

m085s011

M086/M104

m085s012

ROM Version Check (Function code 25)

<Function>

This function allows you to check the management information of the software programs such as version information, check sum.

<Operating Procedure>

1. <M085>
   Press in order the 2 and 5 buttons in the initial stage of the maintenance mode.
   <M086/M104>
   Press the ▲ or ▼ button. "MAINTENANCE 25" appears on the LCD, and then press the OK button.
   The machine displays each of terms described below on the LCD.
2. Press the ▲ or ▼ button to check the next term.

LCD	Description
TOTL: Ver A	Main firmware version information (Revision information)
NET : Ver1.00	Network version information
U0612271600:7B0A*	Main firmware creation date & check sum information
B0608071049:5708*	Boot program creation date & check sum information

How to display the checksum information

Terms displayed with "*" have the checksum information as well. Press the OK button when its version information is displayed on the LCD. Press the OK button again to go back to the version information display. Press the ▲ or ▼ buttons to check the next term.

Note

- If you press the OK button when each version information of Network is displayed on the LCD, you cannot check the checksum information.

3. To terminate this operation, press the Stop/Exit button. The machine beeps for one second and returns to the initial stage of the maintenance mode.

Operational Check of Sensors (Function code 32)

<Function>

This function allows you to check the nine sensors for normal operation.

<Operating Procedure>

1. <M085>

   Press in order the 3 and 2 buttons in the initial stage of the maintenance mode.

   <M086/M104>

   Press the ▲ or ▼ button. "MAINTENANCE 32" appears on the LCD, and then press the OK button.

   The machine beeps 1100 Hz and 400 Hz tones cyclically through the following volumes for testing the speaker. To stop beeping, press the Menu button or OK button.

   - OFF⇒400 Hz (Low⇒Medium⇒High)⇒OFF⇒1100 Hz (Low⇒Medium⇒High)⇒OFF

   If the sensing status are as listed below, the LCD will show the following:

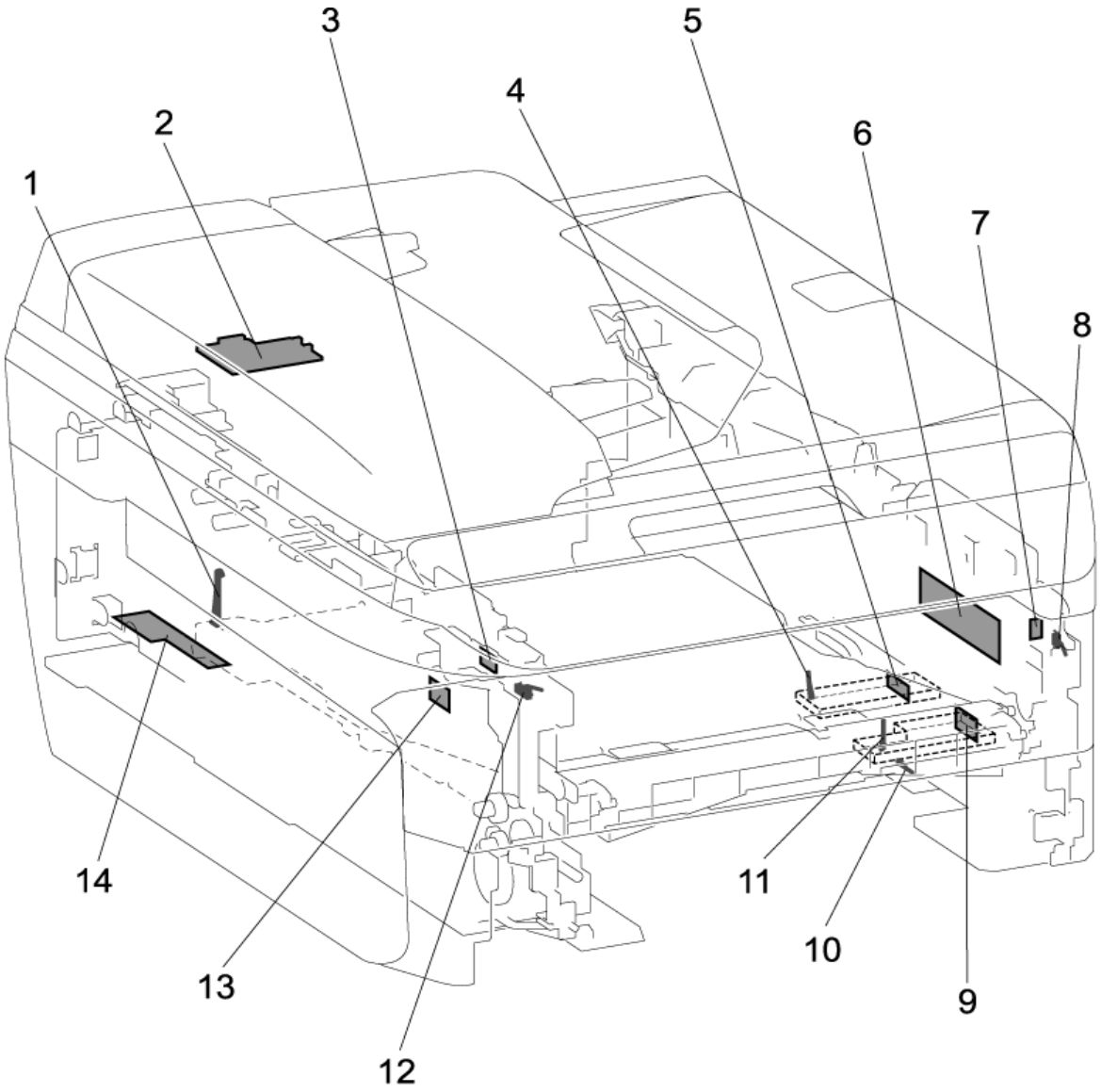
   "DFDRCV" and "NTMNRSTNKOFU" (which can be switched by pressing the Start button for machines.)

   Given below is the relationship between the LCD indication, sensor names and sensor status.

LCD	Sensors	Sensing status
DF*	Document front sensor	No document detected.
DR*	Document rear sensor	No document detected.
CV	Cover sensor	Front cover closed.
NT	New toner sensor	New toner detected.
MN	Manual insertion sensor	No paper detected.
RS	Registration sensor	No paper detected.
TN	Toner sensor	Toner detected.
KO	Edge sensor	No paper detected.
FU	Eject sensor	No recording paper detected.

* Only M104

Location of sensors



1. Eject actuator	8. Cover sensor harness ASSY
2. ADF sensor PCB ASSY (ADF front sensor/rear sensor)	9. Registration front sensor/Tail edge sensor (Registration front sensor PCB ASSY)
3. New toner sensor	10. Edge actuator
4. Registration rear actuator	11. Registration front actuator
5. Registration rear sensor (Registration rear sensor PCB ASSY)	12. New toner sensor harness ASSY
6. Toner sensor (Toner LED PCB ASSY)	13. Toner sensor (Toner sensor PCB unit ASSY)
7. Cover sensor	14. Paper eject sensor (Eject sensor PCB ASSY)

PC Print Function setting (Function code 43)

<Function>

Can charge functions such as the switching of the manual paper feed tray and the recording paper tray or the switching of the resolution.

Note

- Do not work even if enter the maintenance mode during processing of the PC-Print or Fax-Share. Can work after having performed the PC-Print or Printed the PrintSetting / FontList / NetWorkConfig if enter the maintenance mode.
- The choices are different whether support the PCL/PS.

<List of Function>

M085

Function	Description	Set value	Initial value
Manual Feed	Switching of the Manual Feed	On/Off	Off
Resolution	Resolution to print	300/600/1200dpi	600
Toner Save	Switching of the Toner Save	On/Off	Off
Density	Switching of the Density level	-6 to 6	0
Sleep Time	Setting of the time until enter the SleepMode for the engine	0 to 99 (minutes)	5
Pege Protection	Switching of the protection of the page memory	Off/Letter/A4/Legal/Auto	Off
Emulation	Switching of the Emulation	Auto/HP/PS	Auto
Auto I/F Time	Switching of the I/F open time	1 to 99 (seconds)	5
Media Type	Switching of the recording paper type	Refer to function explanation	Plain *1
Paper (Size)	Switching of the area of develop the image	Refer to function explanation	Letter *2
Copies	Switching of the print copies	1 to 99 (pages)	1
Orientation	Switching of the print direction	PortLait/Landscape	Portlait

Function	Description	Set value	Initial value
P-Pos X-Offset	Switching of the offset print position of the landscape orientation	-500 to 500 (1/300dpi)	0
P-Pos Y-Offset	Switching of the offset print position of the portrait orientation	-500 to 500 (1/300dpi)	0
AutoFF	Switching of the auto form feed	On/Off	Off
AutoFF Time	Switching of the time-out period of the auto feed	1 to 99 (seconds)	5
FF Surpress	Switching of the FF Surpress	On/Off	Off
- Auto LF	Switching of the auto LF	On/Off	Off
- Auto CR	Switching of the auto CR	On/Off	Off
- Auto WRAP	Switching of the auto WRAP (auto CRLF at the print width)	On/Off	Off
- Auto SKIP	Switching of the auto SKIP (SKIP at the back-end/tip of the recording paper)	On/Off	On
- Left Margin	Switching of the margin at the left end	0 to 145 (columus)	0
- Right Margin	Switching of the margin at the right end	10 to 155 (columus)	80
- Top Margin	Switching of the margin at the upper end	0 to 2.00 (inches)	0.5
- Bottom Margin	Switching of the margin at the bottom end	0 to 2.00 (inches)	0.5
- Lines	Number of the text lines in the page	5 to 128 (lines)	60
- Error Print	Switching of the Error Print of the Post Script	On/Off	On

M086/M104

Function	Description	Set value	Initial value
Manual Feed	Switching of the Manual Feed	On/Off	Off
Sleep Time	Setting of the time until enter the SleepMode for the engine	0 to 99 (minutes)	5
Auto I/F Time	Switching of the I/F open time	1 to 99 (seconds)	5
P-Pos X-Offset	Switching of the offset print position of the landscape orientation	-500 to 500 (1/300dpi)	0
P-Pos Y-Offset	Switching of the offset print position of the portrait orientation	-500 to 500 (1/300dpi)	0

<Operating Procedure>

1. <M085>
   Press in order the 4 and 3 buttons in the initial stage of the maintenance mode.
   <M086/M104>
   Press the ▲ or ▼ button. "MAINTENANCE 43" appears on the LCD, and then press the OK button. "Manual Feed" appears on the LCD.
2. Press the ▲ or ▼ button. The item to change is displayed on the LCD, and press the OK button.
3. Press the ▲ or ▼ button, or charge the parameter using the numeric keys. And press the OK button. parameter value is confirmed.

<Function explanation>

Function	Set value	Problem
MANUAL FEED	ON/OFF	Configure the setting for the ON/OFF of the manual paper feed. Effective for the print from the PC, or for the print of the NetWorkConfig/TestPrint/Font list/Configuration from the panel. When select the tray on the PC, the setting becomes effective. And this setting is ignored. (Default : OFF)
RESOLUTION	300/600/1200	Configure the setting for the Resolution. Effective only for the print from the PC. When set the Resolution on the PC, the setting becomes effective. And this setting is ignored. (Default : 600)
TONER SAVE	ON/OFF	Configure the setting for the Toner Save Mode. Effective for all print, and change the setting of the Manu (Function). However, as for the Copy, this setting becomes invalid. When set the Toner Save or the PC, the setting becomes effective. And this setting is ignored. (Default : OFF)

Function	Set value	Problem
DENSITY	-6 to 6	Configure the setting for the Density. Effective for the print from the PC, or for the print of the NetWorkConfig/TestPrint/Font List/Configuration from the panel. Link the setting of the Toner Save. Judge the both setting, and decide the density. When set the Density or the PC, the setting becomes effective. And this setting is ignored. (Default : 0)
SLEEP TIME	0 to 99	Configure the setting for the time until shift to the Sleep Time. Change the setting of the Menu (Function). (Default : 5)
PAGE PROTECTION	Off/Letter/Legal/A4/Auto	Configure the setting to protect the page memory, when recording in PC. Set in the PCL-Core. There is not the influence of the memory management problem of the MFC. (Default : OFF)

Function	Set value	Problem
EMULATION	Auto/HP-LaerJet/ BR-Script	Configure the setting for the Emulation. Charge the setting of the Menu (Function). When the data include the ENTER LANGUAGE, the setting becomes effective. And this setting is ignored. (Default : AUTO)
AUTO I/F TIME	1 to 99	Configure the setting for the I/F open time. The function is in the PC-Print. When the PC-Scan/Remote-setUp works on the way, the setting becomes invalid. (Default : 5)
MEDIA TYPE	Thin/Plain/Thick/Thicker/Trancparency Recycled/Bond/Envlopes/EnvThin/EnvThick	Configure the setting for the type of the recording paper. Effective for the print from the PC. When set the type of the recording paper on the PC, the setting becomes effective. And this setting is ignored. The default value is different by the country setting in the Laser product. As for the basics, the Plain is the default value. However, the Thin may be became the default value in JPN/CHN. (Default : Plain/Thin (change in each country))

Function	Set value	Problem
PAPER (SIZE)	Letter/Legal/A4/ Executive/B5/JISB5/A5/B6/A6/Monarch/C5/COM10/ DL/DLL/A4Long/PostCard/Folio	Configure the setting for the size of the recording paper. Does not set the Paper Size of the Menu, set the drawing size of the PC-Print. When set the size of the recording paper on the PC, the setting becomes effective. And this setting is ignored. The default value is different by the country setting in the Laser product. US/CAN are the Letter, and others are the A4. (Default : Letter/A4 (change in each country))
COPIES	1 to 999	Configure the setting for the number of the copies. Effective for the print from the PC. When set the number of the copies on the PC, the setting becomes effective. And this setting is ignored. (Default : 1)
ORIENTATION	Portrait/Landscape	Configure the setting for the print direction. Effective for the print from the PC. (Default : Portrait)

Function	Set value	Problem
P-POS X-OFFSET	-500 to 500	Configure the setting for the offset print position of the landscape orientation. Effective for the print from the PC. When set the X-Offset on the PC, the setting becomes effective. And this setting is ignored. (Default : 0)
P-POS Y-OFFSET	-500 to 500	Configure the setting for the offset print position of the portrait orientation. Effective for the print from the PC. When set the Y-Offset on the PC, the setting becomes effective. And this setting is ignored. (Default : 0)
AUTO OFF	ON/OFF	Configure the setting for the ON/OFF of the Auto Form Feed. Effective for the print from the PC. (Default : 0)
AUTO OFF TIME	1 to 99	Configure the setting for the Time Out, when the Auto Form Feed is ON. (Default : 5)

Function	Set value	Problem
FF SUPPRESS	ON/OFF	Configure the setting for the skip of the blank page. Effective for the print from the PC. The blank data in the Copy/Fax cannot be turned ON/OFF in this setting. (Default : OFF)
AUTO LF	ON/OFF	Configure the setting for the auto line feed. (Default : OFF)
AUTO CR	ON/OFF	Configure the setting for the auto Carriage Return. (Default : OFF)
AUTO WRAP	ON/OFF	Configure the setting for the auto WRAP. (auto CRLF at the print width) (Default : OFF)
AUTO SKIP	ON/OFF	Configure the setting for the skip at the back-end/tip of the recording paper) and add the blank space. (Default : ON)
LEFT MARGIN	0 to 145	Configure the setting for the Left Margin. (column space at the left end) (Default : 0)
RIGHT MARGIN	10 to 155	Configure the setting for the Right Margin. (column space at the right end) (Default : 80)

Function	Set value	Problem
TOP MARGIN	0/0.33/0.5/1.0/1.5/2.0	Configure the setting for the space at the upper end. (Default : 0.5)
BOTTOM MARGIN	0/0.33/0.5/1.0/1.5/2.0	Configure the setting for the space at the bottom end. (Default : 0.5)
LINES	5 to 128	Configure the setting for the number of the lines in the PCL. (Default : 60)
ERROR PRINT	ON/OFF	Configure the setting for the Error Print of the BR-Script 3. (Default : ON)

Received Data Transfer Function (Function code 53) (M085 only)

<Function>

This function transfers received FAX data to another machine. It is useful when the machine cannot print received data due to the printing mechanism being defective.

Note

- The number of files that can be transferred at a time is 99. To transfer 100 files or more, carry out the following procedure more than one time.

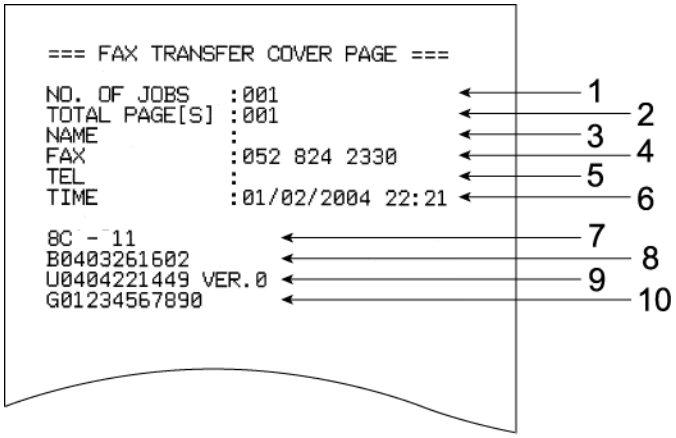
<Operating Procedure>

1. Press in order the 5 and 3 buttons in the initial stage of the maintenance mode.
   The "FAX TRANSFER" appears on the LCD.
2. To check the number of received files, press the 1 button.
   The "1.NO. OF JOBS" appears on the LCD.
   Press the OK button, and the number of received files appears, just as "NO. OF. JOBS: 10."
3. To transfer the activity report only, press the 2 button.
   The "2.ACTIVITY" appears.
   To transfer received files (together with the activity report), press the 3 button.
   The "3.DOCUMENTS" appears. Note that if there is no received file, the "NO DOCUMENTS" appears.
4. To transfer the communication list for the latest communication, press the 4 button.
   The "4.COM.LIST (NEW)" appears.
   To transfer the communication list for last three errors, press the 5 button.
   The "5.COM.LIST (ERR3)" appears.
5. With the "2.ACTIVITY," "3.DOCUMENTS," "4.COM.LIST (NEW)," or "5.COM.LIST (ERR3)" being displayed, press the OK button.
   The "ENTER NO. & SET" appears.
6. Enter the telephone number of the receiver machine and press the OK button again.

Note

- Be sure to type the telephone number with the numerical buttons. No one-touch dialing is allowed in this procedure.
- The machine displays the "ACCEPTED" for approx. two seconds and starts dialing to transfer data.
- No station ID will be attached. A cover page and end page as shown below will be automatically attached, instead.

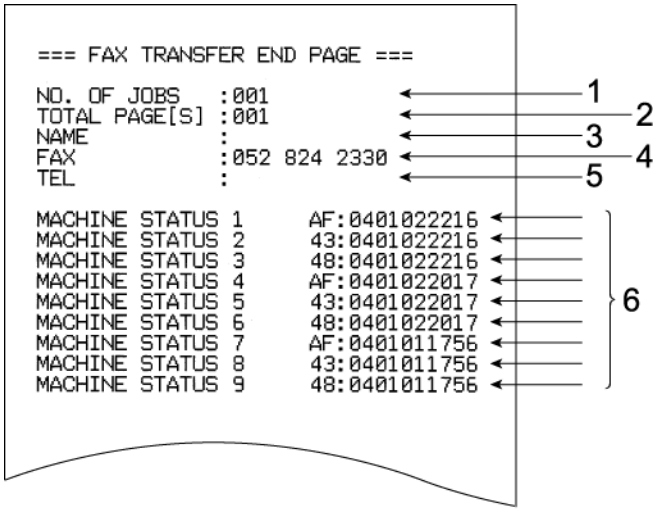
Cover page sample



m085s015

1. Job number	6. Transfer start date
2. Total number of pages to be transferred	7. Model code
3. Station ID registered in the sender equipment	8. Boot ROM info
4. FAX number of the sender equipment	9. ROM info
5. Telephone number of the sender equipment	10. Serial number

End page sample



m085s016

1. Job number	4. FAX number of the sender equipment
2. Total number of pages transferred	5. Telephone number of the sender equipment
3. Station ID registered in the sender equipment	6. Error codes

Fine Adjustment of Scan Start/End Positions (Function code 54)

<Function>

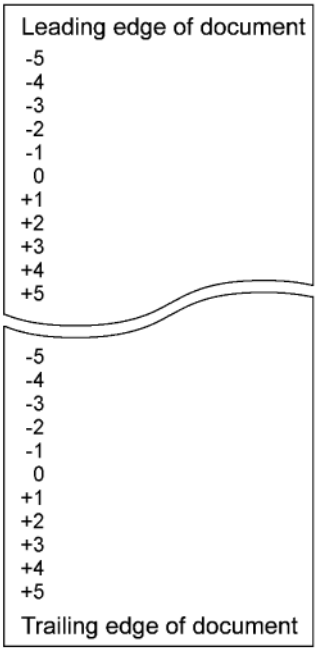
This function allows you to adjust the scanning start and end positions with the ADF and FB unit.

<Operating Procedure>

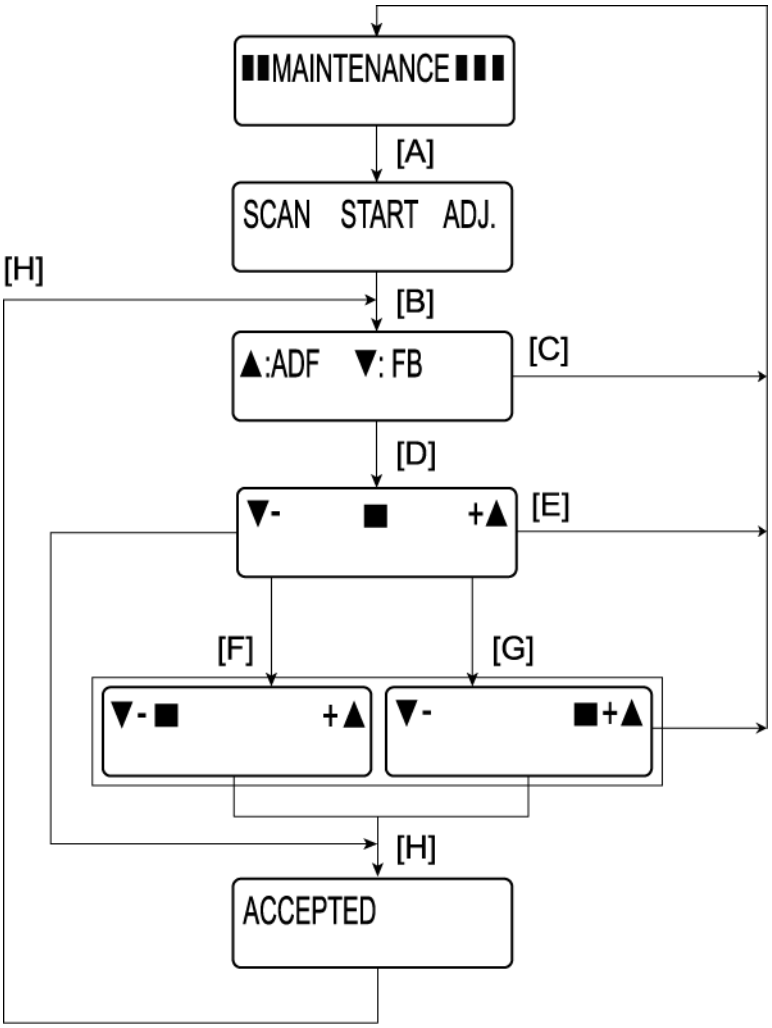
1. <M085>
   Press in order the 5 and 4 buttons in the initial stage of the maintenance mode.
   <M086/M104>
   Press the ▲ or ▼ button. "MAINTENANCE 54" appears on the LCD, and then press the OK button.
   The "SCAN START ADJ." will appear on the LCD.
2. The "▲. ADF ▼. FB" will appear after two seconds.
   Select one of them that you want to adjust the start position.
   If you want to adjust the start position of the ADF, press ▲ button, and if you want to adjust that of the FB unit, press ▼ button.
3. Press the 1 or 2 button to display the present compensation level for the start position.
   Compensation levels can be adjusted in 11 steps from +5 to -5 (mm).
4. Press the ▲ button to increase compensation levels, and the ▼ button to lower them.
   Press the Stop/Exit button so that the machine beeps for one second and returns to the initial state of the maintenance mode without adjusting compensation levels.
5. Set the compensation level and press the OK button.
   The "ACCEPTED" will appear on the LCD. One second later, the machine "▲. ADF ▼. FB" will appear on the LCD.
6. Press the Stop/Exit button when finish the adjustment. The machine beeps for one second and returns to the initial state of the maintenance mode.

Note

- The correlation between the scan start/end positions and compensation levels is shown below.



m085s017



m085s018

- [A]: 5 and 4 buttons select
- [B]: 2 seconds later
- [C]: Stop/Exit button
- [D]: ▲or▼button select
- [E]: Stop/Exit button
- [F]: ▼button
- [G]: ▲button
- [H]: OK button

Acquisition of White Level Data (Function code 55)

<Function>

This function allows the machine to obtain white level data for the CIS unit and save it into the EEPROM on the main PCB.

Note

- If you replace the FB unit, be sure to carry out this procedure.

<Operating Procedure>

1. <M085>
   Press the 5 button twice in the initial stage of the maintenance mode.
   <M086/M104>
   Press the ▲ or ▼ button several times. "MAINTENANCE 55" appears on the LCD, and then press the OK button.
   "Press START" will appear on the LCD.
2. Press the Start button.
   "SCANNER AREA SET" will appear on the LCD.
   The machine saves the revision data into the EEPROM after a few seconds. Then, it beeps for one seconds and returns to the initial stage of the maintenance mode.

Paper Feeding and Ejecting Test (Function code 67)

<Function>

This function allows you to check that a sheet of paper is fed and ejected correctly by printing the grid pattern on a page, whose interval is 1cm.

<Operating Procedure>

1. <M085>
   Press in order the 6 and 7 buttons in the initial stage of the maintenance mode.
   <M086/M104>
   Press the ▲ or ▼ button. "MAINTENANCE 67" appears on the LCD, and then press the OK button.
2. The "PAPER FEED TEST" will appear. The test printing is started, and the grid pattern is printed.
3. Press the Stop/Exit button so that machine stops printing. Then, it beeps for one second and returns to the initial stage of the maintenance mode.

Note

- In the case that the front cover is opened, or that there is no paper in the tray during test printing, the test printing is stopped.
- Continue being printed till the recording paper disappears as far as push the Stop / Exit button or open the front cover.

EEPROM Customizing (Function code 74)

<Function>

This function allows you to customize the EEPROM according to language, function settings, and worker switch settings.

Note

- If you replace the main PCB, be sure to carry out this procedure.

<Operating Procedure>

1. <M085>
   Press in order the 7 and 4 buttons in the initial stage of the maintenance mode.
   <M086/M104>
   Press the ▲ or ▼ button. "MAINTENANCE 74" appears on the LCD, and then press the OK button.
   The current customizing code appears.
2. Enter the desired customizing code. The newly entered code appears.
   To enter letters "A" through "F", press the 1 through 6 buttons while holding down the # button respectively.

   Note

   - The machine does not work properly when an incorrect code is entered.
3. Press the Start button.
   The machine saves the setting and displays the "PARAMETER INIT" on the LCD. The machine beeps for one second and returns to the initial stage of the maintenance mode.
   If you press the Stop/Exit button or no buttons are pressed for one minute in the above procedure, the machine stops the procedure, beeps for one second and returns to the initial stage of the maintenance mode.
   The modification of the setting data is not saved in this case.
   The customizing code are displayed below.

<EEPROM customizing code list>

Product code	factory default	Country	Cutomizing code (M085)	Cutomizing code (M086/M104)
M085-17 (North America / Latin America(110v))	0051	U.S.A.	8001	-
		Canada	0002	-
		Others	8042	-
M085-27 (Europe)	2054	UK	2004	3004
		German	2003	3003
		France	2005	3005
		Italy	2016	3016
		Spain	2015	3015
		Netherlands	2009	3009
		Belgium	2008	3008
		Portugal	2018	3018
		Switzerland	2010	3010
		Sweden	2026	3026
		Denmark	2013	3013
		Norway	2007	3007
		Finland	2012	3012
		Hungary	2038	3038
		Turkey	2030	3030
		South Africa	2024	3024
		Israel	2017	3017
		General 1	2050	3050

Product code	factory default	Country	Cutomizing code (M085)	Cutomizing code (M086/M104)
		Genetal 2	2039	3039
M085-22 (Oceania)	2056	Australia	2006	2006
		New Zealand	2027	2027
M085-29 (Asia-Pacific / Latin America (220v))	0090	Asia	0040	0040
		Singapore	0023	0023
		Others	0045	0045
M085-21 (China)	2020	China	-	-

Operational Check of Fans (Function code 78)

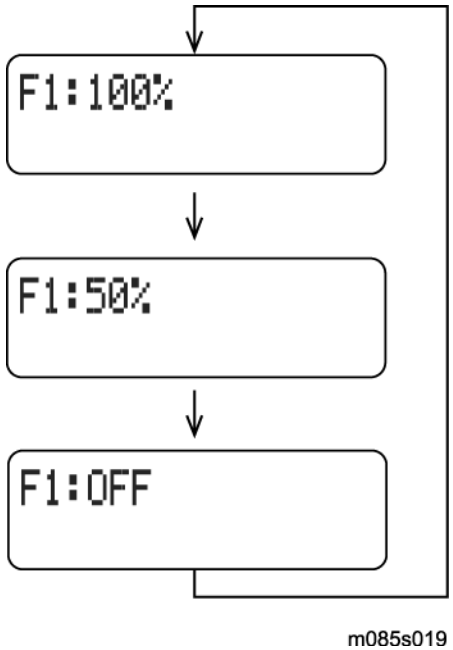
<Function>

This function is to check whether each of fans is operating correctly or not. The following fans are checked.

LCD	Parts Name	Description
F1	Fan motor 60	Evacuate hot air of inside of the machine.

<Operating Procedure>

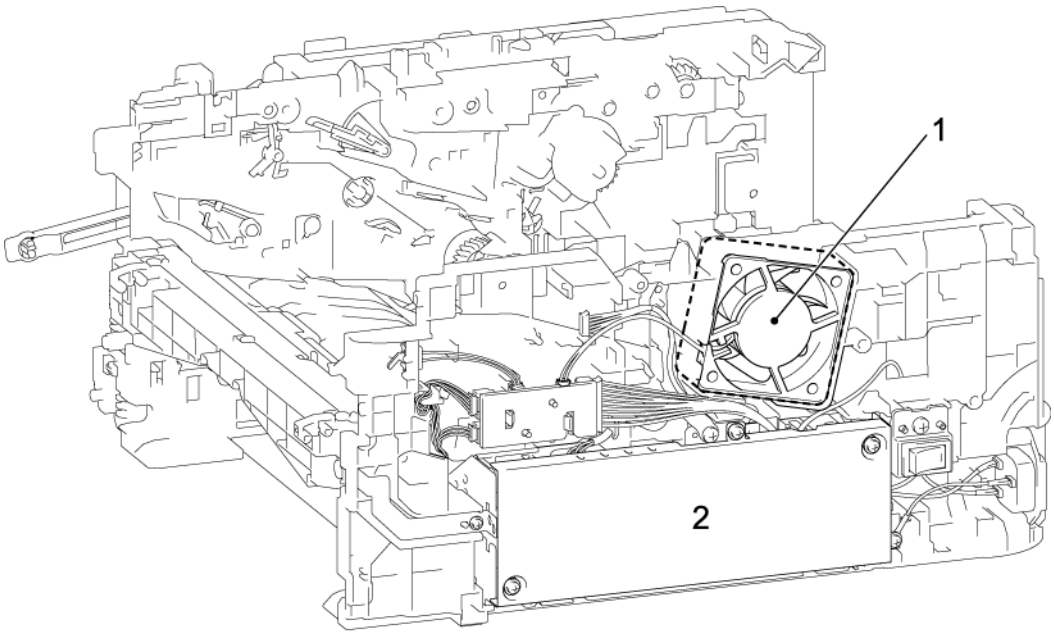
1. <M085>
   Press in order the 7 and 8 buttons in the initial stage of the maintenance mode. The indication will appear on the LCD as shown in the figure below.
   <M086/M104>
   Press the ▲ or ▼ button. "MAINTENANCE 78" appears on the LCD, and then press the OK button.



m085s019

2. Press the Start button so that the LCD indication is changed in the order shown in the figure above. The fan operation is also changed as indicated on the LCD.
3. Press the Stop/Exit button so that the machine stops checking the fans, beeps for one second and returns to the initial stage of the maintenance mode.

Location of fans



1. Fan motor 60 unit
2. <Right side>

Display of the Machine's Log Information (Function code 80)

<Function>

The machine may display its log information on the LCD.

<Operating Procedure>

1. <M085>
   Press in order the 8 and 0 buttons in the initial stage of the maintenance mode.
   The USB serial number appears on the LCD.
   <M086/M104>
   Press the ▲ or ▼ button. "MAINTENANCE 80" appears on the LCD, and then press the OK button.
2. Each time the Start button is pressed, one of the following log information items appears on the LCD in the order. The representative items are given below.
3. Press the Stop/Exit button so that the machine stops this operation, beeps for one second and returns to the initial stage of the maintenance mode.

Note

- If the OK button is pressed when the "MACHINE ERR" or "COMEER1" appears on the LCD, the date and time when the error occurs are indicated on the LCD.

LCD	Description
USB:	Serial number
DRUM:	Drum count
COVERAGE:	Average Coverage (%) *1
TTL_PG:	Total number of printed pages
COPY:	Number of copies made
PCPRINT:	Number of PC prints made
FAX:	Number of FAX outputs made *2
LIST:	Number of list page printed pages
TR1_PG:	Number of pages picked up from the T1.
MN_PAGE:	Number of pages picked up from manual tray.
A4+LTR:	Number of A4/Letter size sheets picked up.
LG+A4L:	Number of LEGAL/A4 LONG size sheets picked up.
B5+EXE:	Number of B5/Executive size sheets picked up.
ENVLOP:	Number of envelopes picked up.
A5	Number of A5 size sheets picked up.
OTHER:	Number of other-size sheets picked up.
PLTNRE:	Number of Plain/Thin/Recycled sheets made.
TRANSP:	Number of Transparency mode.
TKTRBD:	Number of Thick/Thicker/Bond made.
ENVLOP:	Number of Envelop/Env. Thick/Env. Thin made.
TTL_JAM:	Total number of jams
TR1_JAM	Number of jams that occurred at the T1.
MN_JAM	Number of jams that occurred at the manual tray.

LCD	Description
IN_JAM	Number of jams that occurred inside the machine.
RE_JAM	Number of jams that occurred at the ejecting.
DRUM_CH	Number of times the drum unit has been replaced.
DRUM_PG	Number of printed pages with the drum unit.
TNER_CH	Number of times the toner cartridge has been replaced.
TNER_PG1	Number of pages printed with the current toner cartridge.
TNER_PG2	Number of pages printed with the previous toner cartridge.
DEV_BIAS	Developing bias voltage
HODN_ER:	Number of electric discharge error.
FUSR_ER:	Number of fuser error.
MTLK_ER:	Number of motor lock error.
MACHINE ERR_01 to 10	Last machine error code 01 to 10
ADF_JAM	Number of document jams that occurred at the ADF.
ADF_PG	Number of scanned pages from the ADF.
FB_PG	Number of pages scanned with the FB unit.
COMERR1 to 3	Last communication error code 1 to 3

*1 Some margin of error must be taken into consideration because coverage of the printable areas of A4-size paper is calculated using video signals.

*2 Not indicated for the M086 and M104.

The shaded number can reset the counter value by the enter of the 2, 7, 8 and 3 keys.

Error Code Indication (Function code 82)

<Function>

This function displays an error code of the machine on the LCD.

<Operating Procedure>

1. <M085>

   Press in order the 8 and 2 buttons in the initial stage of the maintenance mode.

   <M086/M104>

   Press the ▲ or ▼ button. "MAINTENANCE 82" appears on the LCD, and then press the OK button.

   The machine displays "MACHINE ERROR X X" on the LCD. (☛p.6-3 "Error Cause")
2. Press the Stop/Exit button. The machine beeps for one second and returns to the initial stage of the maintenance mode.

Output of Transmission Log to the Telephone Line (Function code 87) (only M085)

<Function>

This function outputs the transmission log (that the machine has stored about the latest transmission) to the telephone line. It allows the service personnel to receive the transmission log of the user's machine at a remote location and use it for analyzing problems arising in the user's machine.

<Operating Procedure>

1. If the user's machine has a transmission-related problem, call the user's machine at a remote location from your machine.
2. If the line is connected, have the user perform the following:
   1. Hook up to the external phone.
   2. Press in order the Menu, Start, Menu buttons.
   3. Press the 8 and 7 buttons.

      The above operation makes the user's machine send CNG to your machine for sending the transmission log.
3. If you hear the CNG sent from the user's machine, press the Start button of your machine. Your machine will start to receive the transmission log from the user's machine.

Exit from the Maintenance Mode (Function code 99)

<Function>

Exit from the Maintenance Mode.

<Operating Procedure>

1. <M085>

   Press the 9 button twice in the initial stage of the maintenance mode.

   <M086/M104>

   Press the ▲ or ▼ button. "MAINTENANCE 99" appears on the LCD, and then press the OK button.

2. The machine exits from the maintenance mode and returns to the ready state.

5.2 OTHER SERVICE FUNCTIONS

5.2.1 USER MAINTENANCE MODE

This section describes what the end user should do when replacing the consumable parts.

Resetting the drum counter

The printed image may deteriorate when using the drum unit to a certain degree. The machine detects how much the drum unit is used with the drum counter and the “Drum End Soon“ appears on the LCD when the drum unit life is nearly at the end of its life to indicate to the end user that the drum unit life reaches the end of its life soon, in order to prevent the printed image defects due to drum unit deterioration.

The machine does not provide the function which resets the drum counter automatically when the drum unit is replaced with a new one. If replacing the drum unit with a new one without resetting the drum counter, the counted value of the old drum unit is used continuously, and remain appears on the LCD.

When replacing the drum unit with a new one, it is required to reset the drum counter following the steps below:

<Procedure>

1. Open the front cover while the power supply of the machine is ON, after check the LCD of the above-mentioned.
2. <M085>
   Press the Clear/Back button.
   <M086/M104>
   Press the Clear/Back button.
   "Replace Drum? / 1. Yes 2. No" appears on the LCD.
3. <M085>
   Press the 1 button.
   <M086/M104>
   Press the ▲ button.
4. Close the front cover.

Note

- When the counter of the drum replacement number of times print more than 100pieces after reset the drum counter, Rise in the counter value.

5.2.2 RESETTING THE DEVELOPING BIAS VOLTAGE COUNTER

Since print density is likely to become darker as the toner gets older, the developing bias is lowered by degrees (bias voltage is reduced) according to the number of develop roller rotations so that an almost fixed density can be maintained from the beginning to the end. The developing bias voltage can be verified in the display of log information (☛p.5-43 "Display of the Machine's Log Information (Function code 80)").

<Procedure>

1. Open the front cover.
2. <M085>
   Press the Clear/Back button.
   <M086/M104>
   Press the Clear/Back button.
   "Replace Drum? / 1. Yes 2. No" appears on the LCD.
3. <M085>
   Press the button in order of ✳, 0, 0.
   <M086/M104>
   Press the Start button, and then press the ▲ or ▼ button. "00" appears on the LCD, and then press the OK button.
4. Close the front cover.

5.3 WORKER SWITCH SETTINGS (WSW)

This section describes the functions of the Worker switches, which can be divided into two groups: one is for customizing preferences designed for the shipping destination (☛p.5-39 "EEPROM Customizing (Function code 74)") and the other is for modifying preferences that match the machine to the environmental conditions. Use the latter group if the machine malfunctions due to mismatching.
Each switch has eight selectors. However, some of them cannot be set by an end user. Only selectors in the worker switch setting tables of this section that are shaded can be set by an end user.
The worker switch setting procedure is described in p.5-10 "Worker Switch Setting (Function code 10)".

5.3.1 WORKER SWITCH

WSW No.	Function	Reference Page
WSW01	Dial pulse setting	p.5-54
WSW02	Tone signal setting	p.5-56
WSW03	PABX mode setting	p.5-57
WSW04	Transfer facility setting	p.5-59
WSW05	1st dial tone and busy tone detection	p.5-60
WSW06	Redial/Pause button setting and 2nd dial tone detection	p.5-62
WSW07	Dial tone setting 1	p.5-65
WSW08	Dial tone setting 2	p.5-67
WSW09	Protocol definition 1	p.5-68
WSW10	Protocol definition 2	p.5-70
WSW11	Busy tone setting	p.5-71
WSW12	Signal detection condition setting	p.5-72

WSW No.	Function	Reference Page
WSW13	Modem setting	p.5-74
WSW14	AUTO ANS facility setting	p.5-75
WSW15	Redial facility setting	p.5-76
WSW16	Function setting 1	p.5-77
WSW17	Function setting 2	p.5-78
WSW18	Function setting 3	p.5-79
WSW19	Transmission speed setting	p.5-80
WSW20	Overseas communications mode setting	p.5-81
WSW21	TAD setting 1	p.5-82
WSW22	ECM and call waiting caller ID	p.5-83
WSW23	Communications setting	p.5-84
WSW24	TAD setting 2	p.5-86
WSW25	TAD setting 3	p.5-87
WSW26	Function setting 4	p.5-88
WSW27	Function setting 5	p.5-90
WSW28	Function setting 6	p.5-91
WSW29	Not used	-
WSW30	Function setting 8	p.5-92
WSW31	Function setting 9	p.5-93
WSW32	Function setting 10	p.5-94
WSW33	Function setting 11	p.5-94

WSW34	Function setting 12	p.5-95
WSW35	Not used	-
WSW36	Function setting 14	p.5-96
WSW37	Function setting 15	p.5-97
WSW38	V.34 transmission settings	p.5-98
WSW39	V.34 transmission speed	p.5-100
WSW40	Not used	-
WSW41	Not used	-
WSW42	Internet mail settings	p.5-101
WSW43	Function setting 16	p.5-102
WSW44	Not used	-
WSW45	Not used	-
WSW46	Not used	-
WSW47	Switching between high- and full-speed USB	p.5-103
WSW48	Not used	-
WSW49	End-of-copying beep and print in black	p.5-104
WSW50	Not used	-
WSW51	Function setting 17	p.5-105
WSW52	Not used	-
WSW53	Function setting 19	p.5-105
WSW54	Function setting 20	p.5-106
WSW55	Function setting 21	p.5-107

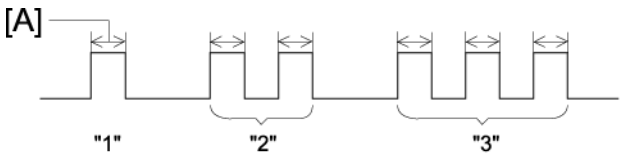
WSW56	Function setting 22	p.5-108
WSW57	Not used	-
WSW58	Function setting 24	p.5-108
WSW59	Function setting 25	p.5-109
WSW60	Not used	-
WSW61	Not used	-
WSW62	Not used	-
WSW63	Not used	-

The functions and settings for each worker switch (WSW) are described below;

5.3.2 WSW01

Selector No.	Function	Setting and Specifications
1 2	Dial pulse generation mode	**No.1 2** 0 0 : N 0 1 : N+1 1 0 : 10-N 1 1 : N
3 4	Break time length in pulse dialing	**No.3 4** 0 0 : 60 ms 0 1 : 67 ms 1 0 : 40 ms 1 1 : 64 ms (for 16 PPS)
5 6	Inter-digit pause	**No.5 6** 0 0 : 800 ms 0 1 : 850 ms 1 0 : 950 ms (for 16 PPS) 1 1 : 600 ms (at 106-ms intervals)
7	Switching between pulse and tone dialing, by the function switch	0: Yes 1: No
8	Default dialing mode, pulse (DP) or tone (PB) dialing	0: PB 1: DP

- **Selectors 1 and 2: Dial pulse generation mode**
  These selectors set the number of pulses to be generated in pulse dialing.
  N: Dialing "N" generates "N" pulses. (Dialing "0" generates 10 pulses.)
  N + 1: Dialing "N" generates "N + 1" pulses.
  10 - N: Dialing "N" generates "10 - N" pulses.
- **Selectors 3 and 4: Break time length in pulse dialin**g

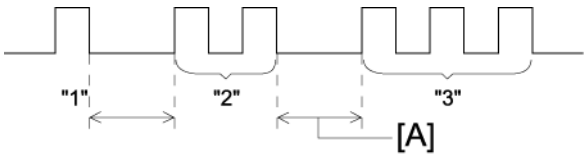


m085s022

These selectors set the break time length [A] in pulse dialing.

(Example: If "1," "2," and "3" are dialed when N is set by selectors 1 and 2.)

- **Selectors 5 and 6: Inter-digit pause**



m085s023

These selectors set the inter-digit pause [A] in pulse dialing.

(Example: If "1," "2," and "3" are dialed when N is set by selectors 1 and 2.)

- **Selector 7: Switching between pulse and tone dialing, by the function switch**

  This selector determines whether or not the dialing mode can be switched between the pulse (DP) and tone (PB) dialing by using the function switch.

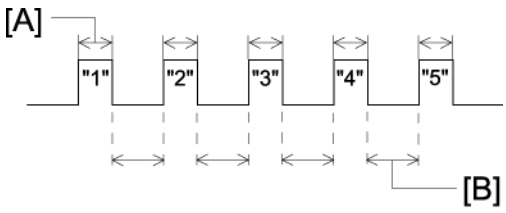
- **Selector 8: Default dialing mode, pulse (DP) or tone (PB) dialing**

  This selector sets the default dialing mode (pulse dialing or tone dialing) which can be changed by the function switch. If the user switches it with the function switch when selector 7 is set to "0," the setting specified by this selector will also be switched automatically.

5.3.3 WSW02

Selector No.	Function	Setting and Specifications
1 2	Tone signal transmission time length	**No. 1 2** 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 100 ms
3 4	Min. pause in tone dialing	**No. 3 4** 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 140 ms
5 to 8	Attenuator for pseudo ring backtone to the line (selectable in the range of 0-15 dB, in 1 dB increments)	No 5 = 0: 0 dB, 1: 8 dB No 6 = 0: 0 dB, 1: 4 dB No 7 = 0: 0 dB, 1: 2 dB No 8 = 0: 0 dB, 1: 1 dB

- **Selectors 1 through 4: Tone signal transmission time length and Min. pause in tone dialing**



m085s024

These selectors set the tone signal transmission time length [A] and minimum pause [B] in tone dialing.

(Example: If "1," "2," "3," "4," and "5" are dialed.)

- **Selectors 5 through 8: Attenuator for pseudo ring backtone to the line**

These selectors are used to adjust the sound volume of a ring backtone in the F/T mode, an on-hold sound, or a beep generated as a signal during remote control operation or at the start of ICM recording.

The larger the value specified by these selectors, the greater the attenuation.

5.3.4 WSW03

Selector No.	Function	Setting and Specifications
1	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
2 to 4	Detection time length of PABX* dial tone, required for starting dialing	**No. 2 3 4** 0 0 0 : 50 ms 0 0 1 : 210 ms 0 1 0 : 500 ms 0 1 1 : 800 ms 1 0 0 : 900 ms 1 0 1 : 1.5 sec. 1 1 0 : 2.0 sec. 1 1 1 : 2.5 sec.
5	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
6 7	Dial tone detection in PABX*	**No. 6 7** 0 0 : No detection (3.5 sec. wait) 0 1 : No detection (5 sec. wait) 1 0 : No detection (7 sec. wait) 1 1 : Detection (Frequency only)
8	Not used.	-

* PABX: Private automatic branch exchange

Note

- Selectors 2 through 4, 6 and 7 are not applicable where no PABX is installed.

- **Selectors 1 and 5: CNG detection when sharing a modular wall socket with a telephone**

  These selectors determine whether or not the machine detects a CNG signal when a line is connected to a telephone sharing a modular wall socket with the machine. Upon detection of CNG signals by the number of cycles specified by these selectors, the machine interprets CNG as an effective signal and then starts FAX reception.

Selector No.1	Selector No.5	Cycle
0 (A)	0 (A)	0.5 cycle
0 (A)	1 (B)	1.0 cycle
1 (A)	0 (A)	1.5 cycle
1 (B)	1 (B)	2.0 cycle

- **Selectors 2 through 4:Detection time length of PABX dial tone, required for starting dialing**

  Upon detection of the PABX dial tone for the time length set by these selectors, the machine starts dialing. These selectors are effective only when both selectors 6 and 7 are set to "1" (Detection).
- **Selectors 6 and 7: Dial tone detection in PABX***

  These selectors activate or deactivate the dial tone detection function which detects a dial tone when a line is connected to the PABX.

  Setting both of these selectors to "1" activates the dial tone detection function so that the machine starts dialing upon detection of a dial tone when a line is connected.

  Other setting combinations deactivate the dial tone detection function so that the machine starts dialing after the specified WAIT (3.5, 5.0, or 7.0 sec.) without detection of a dial tone when a line is connected.

5.3.5 WSW04

Selector No.	Function	Setting and Specifications
1	Not used.	-
2 3	Dual tone detection frequency in ICM recording	**No. 2 3** 0 0 : 350 and 440 Hz (A) 0 1 : 440 and 480 Hz (B) 1 0 : 480 and 620 Hz (C) 1 1 : 480 and 620 Hz (C)
4	Dual tone detection sensitivity in ICM recording	0: Normal 1: High
5	Length of time added to time designated by selectors 3 and 4 on the WSW 24 (time between CML ON and pseudo ring backtone return).	0: Not added 1: +4 seconds added
6 to 8	Break time length for flash function	**No. 6 7 8** 0 0 0 : 80 ms 0 0 1 : 100 ms 0 1 0 : 110 ms 0 1 1 : 120 ms 1 0 0 : 200 ms 1 0 1 : 250 ms 1 1 0 : 500 ms 1 1 1 : 700 ms

Note

- Selectors 5 through 8 are not applicable in those countries where no transfer facility is supported.
- Selectors 2 through 4 are applicable to models equipped with built-in TADs.

- **Selectors 2 and 3: Dual tone detection frequency in ICM recording**
  If the machine detects either of the frequencies set by these selectors in ICM recording, it disconnects the line. For example, if these selectors are set to "0, 0" the machine disconnects the line upon detection of 350 Hz or 440 Hz.

- **Selector 4: Dual tone detection sensitivity in ICM recording**
  Setting this selector to "1" increases the tone detection sensitivity in ICM recording.
- **Selectors 6 and 8: Break time length for flash function**
  These selectors set the break time length. This setting is effective only when the flash function is selected for the Search/Speed Dial button by using the function switch.

5.3.6 WSW05

Selector No.	Function	Setting and Specifications
1 to 3	1st dial tone detection	**No. 1 2 3** 0 0 0 : 3.5 sec. wait 0 0 1 : 7.0 sec. wait 0 1 0 : 10.5 sec. wait 0 1 1 : 14.0 sec. wait 1 0 0 : 17.5 sec. wait 1 0 1 : 21.0 sec. wait 1 1 0 : 25.0 sec. wait 1 1 1 : Detection (Without wait)
4	Max. pause time allowable for remote ID code detection	0: 2 sec. 1: 1 sec.
5 6	Busy tone detection in auto-matic sending mode	**No. 5 6** 0 0 : No detection 0 1 : Detection only after dialing 1 0 : No detection 1 1 : Detection before and after dialing
7	Busy tone detection in auto-matic receiving mode	0: Yes 1: No
8	Not used.	-

Note

- Selectors 5 through 7 are not applicable in those countries where no busy tone detection is supported.

- **Selectors 1 through 3: 1st dial tone detection**

These selectors activate or deactivate the 1st dial tone detection function which detects the 1st dial tone issued from the PSTN when a line is connected to the PSTN.
Setting all of these selectors to "1" activates the dial tone detection function so that the machine starts dialing upon detection of a dial tone when a line is connected. (However, in those countries which support no dial tone detection function, e.g., in the U.S.A., setting these selectors to "1" makes the machine start dialing after a WAIT of 3.5 seconds.) For the detecting conditions of the 1st dial tone, refer to WSW07 and WSW08.
Other setting combinations deactivate the dial tone detection function so that the machine starts dialing after the specified WAIT (3.5, 7.0, 10.5, 14.0, 17.5, 21.0, or 24.5 seconds) without detection of a dial tone when a line is connected to the PSTN.

- **Selector 4: Max. pause time allowable for remote ID code detection**
  This selector sets the maximum pause time allowable for detecting the second digit of a remote ID code after detection of the first digit in remote reception.
  If selector 4 is set to "0" (2 seconds), for instance, only a remote ID code whose second digit is detected within 2 seconds after detection of the first digit will become effective so as to activate the remote function.
- **Selectors 5 and 6: Busy tone detection in automatic sending mode**
  These selectors determine whether or not the machine automatically disconnects a line upon detection of a busy tone in automatic sending mode.
  Setting selector 6 to "0" ignores a busy tone so that the machine does not disconnect the line. Setting selectors 5 and 6 to "0" and "1," respectively, makes the machine detect a busy tone only after dialing and disconnect the line.
  Setting both of selectors 5 and 6 to "1" makes the machine detect a busy tone before and after dialing and then disconnect the line.
- **Selector 7: Busy tone detection in automatic receiving mode**
  This selector determines whether or not the machine automatically disconnects the line upon detection of a busy tone in automatic receiving mode.

5.3.7 WSW06

Selector No.	Function	Setting and Specifications
1 to 3	Redial/Pause button setting and 2nd dial tone detection	**No. 1 2 3** 0 0 0 : No pause 0 0 1 : 3.5 sec. wait 0 1 0 : 7 sec. wait 0 1 1 : 10.5 sec. wait 1 0 0 : 2.8 sec. wait 1 0 1 : 2nd dial tone detection both in DP and push-button (PB) dialing system 1 1 0 : 2nd dial tone detection only in pulse dialing (DP) system 1 1 1 : 2nd dial tone detection both in DP and push-button (PB) dialing system
4 to 6	Detection of international tone	**No. 4 5 6** 0 0 0 : 50 ms 0 0 1 : 250 ms 0 1 0 : 500 ms 0 1 1 : 620 ms 1 0 0 : 800 ms 1 0 1 : 1.5 sec. 1 1 0 : 2.0 sec. 1 1 1 : 2.5 sec.
7	No. of 2nd dial tone detection cycles	0: 1 cycle 1: 2 cycles
8	Allowable instantaneous interrupt during reception of 2nd dial tone	0: 30 ms 1: 50 ms

Note

- Selectors 4 through 8 are not applicable in those countries where no dial tone detection is supported, e.g., U.S.A.

- **Selectors 1 through 3: Redial/Pause button setting and 2nd dial tone detection**

Selector 1	Selector 2	Selector 3	
0	0	0	No wait is inserted even if the Redial/Pause button is pressed.
0	0	1	If you press the Redial/Pause button during dialing, the machine will insert wait as defined in the above table. If the Redial/Pause button is pressed repeatedly, the machine inserts the specified wait multiplied by the number of depressions. It applies also in hook-up dialing.
0	1	0	
0	1	1	
1	0	0	
1	0	1	Each time you press the Redial/Pause button in dialing, the machine will wait for the 2nd dial tone to be sent via the communications line regardless of pulse dialing or tone dialing. In those countries where no dial tone detection function is supported, the machine inserts a wait of 3.5 seconds.
1	1	0	If you press the Redial/Pause button in pulse dialing, the machine will first wait for the 2nd dial tone to be sent via the communications line. After that, pressing the Redial/Pause button will cause the machine to insert a WAIT of 3.5 seconds. In tone dialing, the machine will insert a WAIT of 3.5 seconds. In those countries where no dial tone detection function is supported, the machine inserts a wait of 3.5 seconds.

Selector 1	Selector 2	Selector 3	
1	1	1	If you press the Redial/Pause button, the machine will first wait for the 2nd dial tone to be sent via the communications line regardless of pulse dialing or tone dialing. After that, pressing the Redial/Pause button will cause the machine to insert a wait of 3.5 seconds. In those countries where no dial tone detection function is supported, the machine inserts a wait of 3.5 seconds.

- **Selectors 4 through 6: Detection of international tone**
  Upon detection of the 2nd dial tone for the time length specified by these selectors, the machine starts dialing.
  This setting is effective only when the 2nd dial tone detection function is activated by selectors 1 through 3 (Setting 101, 110, or 111).
  This function does not apply in those countries where no dial tone detection function is supported.
- **Selector 7: No. of 2nd dial tone detection cycles**
  This selector sets the number of dial tone detection cycles required for starting dialing.
- **Selector 8: Allowable instantaneous interrupt during reception of 2nd dial tone**
  This selector sets the allowable instantaneous interrupt period that should be ignored during reception of the 2nd dial tone.

5.3.8 WSW07

Selector No.	Function	Setting and Specifications
1 2	Dial tone frequency band control	**No. 1 2** 0 0 : Narrows by 10 Hz 0 1 : Initial value 1 0 : Widens by 10 Hz 1 1 : Widens by 10 Hz
3	Not used.	-
4 to 6	2nd dial tone detection level (Z = 600 Ω)	**No. 4 5 6** 0 0 0 : -21 dBm 0 0 1 : -24 dBm 0 1 0 : -27 dBm 0 1 1 : -30 dBm 1 0 0 : -33 dBm 1 0 1 : -36 dBm 1 1 0 : -39 dBm 1 1 1 : -42 dBm
7	Allowable instantaneous interrupt during reception of 1st dial tone	0: 30 ms 1: 50 ms
8	Not used.	-

Note

- Selectors 1, 2, 4 through 7 are not applicable in those countries where no dial tone or line current detection is supported, e.g., U.S.A.

- **Selectors 1 and 2: Dial tone frequency band control**
  These selectors set the frequency band for the 1st dial tone and busy tone (before dialing) to be detected. This setting is effective only when selectors 1 through 3 on WSW05 are set to "1,1,1."
- **Selectors 4 through 6: 2nd dial tone detection level**
  These selectors set the detection level of the 2nd dial tone.
- **Selector 7: Allowable instantaneous interrupt during reception of 1st dial tone**
  This selector sets the allowable instantaneous interrupt period that should be ignored during reception of the 1st dial tone.

5.3.9 WSW08

Selector No.	Function	Setting and Specifications
1 to 3	1st dial tone detection time length	**No. 1 2 3** 0 0 0 : 50 ms 0 0 1 : 250 ms 0 1 0 : 500 ms 0 1 1 : 620 ms 1 0 0 : 800 ms 1 0 1 : 1.5 sec. 1 1 0 : 2.0 sec. 1 1 1 : 2.5 sec.
4 5	Time-out length for 1st and 2nd dial tone detection	**No. 4 5** 0 0 : 10 sec. 0 1 : 20 sec. 1 0 : 15 sec. 1 1 : 30 sec.
6 to 8	Detection level of 1st dial tone and busy tone before dialing	**No. 6 7 8** 0 0 0 : -21 dBm 0 0 1 : -24 dBm 0 1 0 : -27 dBm 0 1 1 : -30 dBm 1 0 0 : -33 dBm 1 0 1 : -36 dBm 1 1 0 : -39 dBm 1 1 1 : -42 dBm

Note

- The WSW08 is not applicable in those countries where no dial tone detection is supported, e.g., U.S.A.

- **Selectors 1 through 3: 1st dial tone detection time length**
  Upon detection of the 1st dial tone for the time length set by these selectors, the machine starts dialing. This setting is effective only when selectors 1 through 3 on WSW05 are set to "1,1,1."

- **Selectors 4 and 5: Time-out length for 1st and 2nd dial tone detection**
  These selectors set the time-out length for the 1st and 2nd dial tone detection so that the machine waits dial tone input for the specified time length and disconnects itself from the line when no dial tone is inputted.

5.3.10 WSW09

Selector No.	Function	Setting and Specifications
1	Frame length selection	0: 256 octets 1: 64 octets
2	Use of non-standard commands	0 : Allowed 1: Prohibited
3 4	No. of retries	**No. 3 4** 0 0 : 4 times 0 1 : 3 times 1 0 : 2 times 1 1 : 1 times
5	T5 timer	0: 300 sec. 1: 60 sec.
6	T1 timer	0: 35 sec. 1: 40 sec.
7 8	Timeout for response from the called station in automatic sending mode	**No. 7 8** 0 0 : 55 sec. (in U.S.A. and Canadian models) / 60 sec. (in other models) 0 1 : 140 sec. 1 0 : 90 sec. 1 1 : 35 sec.

Note

- Selectors 1 through 5 are not applicable in those models which do not support ECM.

- **Selector 1: Frame length selection**
  Usually a single frame consists of 256 octets (1 octet = 8 bits). For communications lines with higher bit error rate, however, set selector 1 to "1" so that the machine can divide a message into 64-octet frames.
  Remarks: The error correction mode (ECM) is a facsimile transmission manner in which the machine divides a message into frames for transmission so that if any data error occurs on the transmission line, the machine retransmits only those frames containing the error

data.

- **Selector 2: Use of non-standard commands**
  If this selector is set to "0," the machine can use non-standard commands (the machine's native-mode commands, e.g., NSF, NSC, and NSS) for communications. If it is set to "1," the machine will use standard commands only.
- **Selectors 3 and 4: No. of retries**
  These selectors set the number of retries in each specified modem transmission speed.
- **Selector 5: T5 timer**
  This selector sets the time length for the T5 timer.
- **Selector 6: T1 timer**
  This selector sets the time length for the T1 timer.
- **Selectors 7 and 8: Timeout for response from the called station in automatic sending mode**
  If the machine (calling station) receives no response (no G3 command) from the called terminal in automatic sending mode for the period specified by these selectors, it disconnects the line.

5.3.11 WSW10

Selector No.	Function	Setting and Specifications
1	DPS switching interfacing with CML	0: No 1: Yes
2	Time length from transmission of the last dial digit to CML ON	0 : 100 ms 1: 50 ms
3	Time length from CML ON to CNG transmission	0 : 2 sec. 1: 4 sec.
4	Time length from CML ON to CED transmission (except for facsimile-to-telephone switching)	0 : 0.5 sec. 1: 2 sec.
5 6	No. of training retries	**No. 5 6** 0 0 : 1 time 0 1 : 2 times 1 0 : 3 times 1 1 : 4 times
7	Encoding system (Compression): MR	0: Allowed 1: Not allowed
8	Encoding system (Compression): MMR	0: Allowed 1: Not allowed

- **Selector 2: Time length from transmission of the last dial digit to CML ON**
  This selector sets the time length from when the machine transmits the last dial digit until the CML relay comes on.
- **Selector 3: Time length from CML ON to CNG transmission**
  This selector sets the time length until the machine transmits a CNG after it turns on the CML relay.
- **Selector 4: Time length from CML ON to CED transmission**
  This selector sets the time length until the machine transmits a CED after it turns on the CML relay. This setting does not apply to switching between facsimile and telephone.
- **Selectors 5 and 6: No. of training retries**
  These selectors set the number of training retries to be repeated before automatic fallback.
- **Selectors 7 and 8: Encoding system (Compression)**
  This selector determines whether or not to allow the use of the MR/MMR coding system.

5.3.12 WSW11

Selector No.	Function	Setting and Specifications
1 2	Busy tone frequency band control	**No. 1 2** 0 0 : Narrows by 10 Hz 0 1 : Initial value 1 0 : Widens by 10 Hz 1 1 : Widens by 10 Hz
3	ON/OFF time length ranges for busy tone (More than one setting allowed)	1: 250-750/250-750 ms
4		1: 400-600/400-600 ms
5		1: 175-440/175-440 ms
6		1: 100-1000/17-660 ms
7		1: 110-410/320-550 ms
8		1: 100-660/100-660 ms

Note

- WSW11 is not applicable in those countries where no busy tone detection is supported.
- The setting of WSW11 is effective only when selectors 5 and 6 on WSW05 are set to "0, 1" or "1, 1" (Busy tone detection).

- **Selectors 1 and 2: Busy tone frequency band control**

  These selectors set the frequency band for busy tone to be detected.

- **Selectors 3 through 8: ON/OFF time length ranges for busy tone**

  These selectors set the ON and OFF time length ranges for busy tone to be detected. If more than one selector is set to "1," the ranges become wider. For example, if selectors 4 and 5 are set to "1," the ON and OFF time length ranges are from 175 to 600 ms.

5.3.13 WSW12

Selector No.	Function	Setting and Specifications
1 2	Min. detection period required for interpreting incoming calling signal (CI) as OFF	**No. 1 2** 0 0 : 1500 ms 0 1 : 500 ms 1 0 : 700 ms 1 1 : 900 ms
3 4	Max. detection period for incoming calling signal (CI) being OFF	**No. 3 4** 0 0 : 6 sec. 0 1 : 7 sec. 1 0 : 9 sec. 1 1 : 11 sec.
5 6	Min. detection period required for acknowledging incoming calling signal (CI) as ON	**No. 5 6** 0 0 : 800 ms (1000 ms*) 0 1 : 200 ms 1 0 : 250 ms 1 1 : 150 ms
7	Line connection timing	0: Ringer-OFF period 1: Ringer-ON period
8	Not used.	-

* 1000 ms in Chinese models.

- **Selectors 1 through 4: Min. detection period required for interpreting incoming calling signal (CI) as OFF / Max. detection period for incoming calling signal (CI) being OFF**

  If the machine detects the OFF state of a CI signal for the period greater than the value set by selectors 1 and 2 and less than the value set by selectors 3 and 4, it interprets the CI signal as OFF.

- **Selectors 5 and 6: Min. detection period required for acknowledging incoming calling signal (CI) as ON**

  These selectors set the period required to make the machine acknowledge itself to be called. That is, if the machine continuously detects a CI signal with the frequency set by

selectors 1 through 4 on WSW14 during the period set by these selectors 5 and 6, then it acknowledges the call.

- **Selector 7: Line connection timing**
  If a line is connected in a ringer-ON period, FAX models equipped with SDAA circuits may malfunction due to the ringer voltage. To make the line connection stable, this selector should be set to "0" so that a line is connected in a ringer-OFF period.

5.3.14 WSW13

Selector No.	Function	Setting and Specifications
1 2	Cable equalizer	**No. 1 2** 0 0 : 0 km 0 1 : 1.8 km 1 0 : 3.6 km 1 1 : 5.6 km
3 4	Reception level	**No. 3 4** 0 0 : -43 dBm 0 1 : -47 dBm 1 0 : -49 dBm 1 1 : -51 dBm
5 to 8	Modem attenuator	No.5 = 0: 0 dB, 1: 8 dB No.6 = 0: 0 dB, 1: 4 dB No.7 = 0: 0 dB, 1: 2 dB No.8 = 0: 0 dB, 1: 1 dB

Note

- The modem should be adjusted according to the user's line conditions.

- **Selectors 1 and 2: Cable equalizer**

  These selectors are used to improve the pass-band characteristics of analogue signals on a line. Attenuation in the high-band frequency is greater than in the low-band frequency. Set these selectors according to the distance from the telephone switchboard to the machine.

- **Selectors 3 and 4: Reception level**

  These selectors set the optimum receive signal level.

- **Selectors 5 through 8: Modem attenuator**

  These selectors are used to adjust the transmitting level attenuation of the modem when the reception level at the remote station is improper due to line loss. This function applies for G3 protocol signals.

  Setting two or more selectors to "1" produces addition of attenuation assigned to each selector.

  If selector 8 on WSW23 is set to "0," this setting is so limited that 10 dB (1 dB in France) or higher setting only is effective.

Note that in Japan and China, 9 dB or higher and 2 dB or higher settings only are effective, respectively, regardless of whether selector 8 on WSW23 is set to "0."

5.3.15 WSW14

Selector No.	Function	Setting and Specifications
1 2	Frequency band selection (lower limit) for incoming calling signal (CI)	**No. 1 2** 0 0 : 13 Hz 0 1 : 15 Hz 1 0 : 23 Hz 1 1 : 20 Hz
3 4	Frequency band selection (upper limit) for incoming calling signal (CI)	**No. 3 4** 0 0 : 30 Hz 0 1 : 55 Hz 1 0 : 70 Hz 1 1 : 200 Hz
5 to 8	No. of rings in AUTO ANS mode	**No. 5 6 7 8** 0 0 0 0 : Fixed to once 0 0 0 1 : 1 to 6 times 0 0 1 0 : 1 to 8 times 0 0 1 1 : 2 to 8 times 0 1 0 0 : 1 to 2 times 0 1 0 1 : 1 to 3 times 0 1 1 0 : 1 to 4 times 0 1 1 1 : 1 to 5 times 1 0 0 0 : 2 to 3 times 1 0 0 1 : 2 to 4 times 1 0 1 0 : 2 to 5 times 1 0 1 1 : 2 to 6 times 1 1 0 0 : 1 to 10 times 1 1 0 1 : 2 to 10 times 1 1 1 0 : 3 to 5 times 1 1 1 1 : 4 to 10 times

- **Selectors 1 through 4: Frequency band selection for incoming calling signal (CI)**
  These selectors are used to select the frequency band of CI for activating the AUTO ANS facility.
  In the French models, if the user sets the PBX to OFF from the control panel, the setting made by selectors 1 and 2 will take no effect and the frequency's lower limit will be fixed to 32 Hz. (Even if the setting made by these selectors does not apply, it will be printed on the configuration list.)
- **Selectors 5 through 8: No. of rings in AUTO ANS mode**
  These selectors set the number of rings to initiate the AUTO ANS facility.

5.3.16 WSW15

Selector No.	Function	Setting and Specifications
1 2	Redial interval	**No. 1 2** 0 0 : 5 min. 0 1 : 1 min. 1 0 : 2 min. 1 1 : 3 min.
3 to 6	No. of redialings	**No. 3 4 5 6** 0 0 0 0 : 16 times 0 0 0 1 : 1 times 0 0 1 0 : 2 times 0 0 1 1 : 3 times ↓ 1 1 1 1 : 15 times
7	Not used.	-
8	CRP option	0: Disable 1: Enable

- **Selectors 1 through 6: Redial interval and No. of redialings**
  The machine redials by the number of times set by selectors 3 through 6 at intervals set by selectors 1 and 2.
- **Selector 8: CRP option**
  If a command error occurs in the machine (calling station), the machine usually waits for three seconds and then makes a retry three times. This CRP option is a request command that can be sent from the called station for requesting the calling station to retry the failed command immediately.

5.3.17 WSW16

Selector No.	Function	Setting and Specifications
1	Not used.	-
2	ITU-T (CCITT) superfine recommendation	0: OFF 1: ON
3 to 6	Not used.	-
7	Max. document length limitation	0: 400 cm 1: 90 cm
8	Stop/Exit button pressed during reception	0: Not functional 1: Functional

Note

- Selector 7 is applicable to models equipped with ADF units.

- **Selector 2: ITU-T (CCITT) superfine recommendation**
  If this selector is set to "1," the machine communicates in ITU-T (CCITT) recommended superfine mode (15.4 lines/mm). If it is set to "0," it communicates in native superfine mode.
- **Selector 7: Max. document length limitation**
  This selector is used to select the maximum length of a document to be sent.
- **Selector 8: Stop/Exit button pressed during reception**
  If this selector is set to "1," pressing the Stop/Exit button can stop the current receiving operation. The received data will be lost.

5.3.18 WSW17

Selector No.	Function	Setting and Specifications
1 2	Off-hook alarm	**No. 1 2** 0 0 : No alarm 0 1 : Always valid 1 0 : Valid except when' call reservation' is selected. 1 1 : Valid except when' call reservation' is selected.
3 4	Not used.	-
5	Calendar clock type	0: U.S.A. type 1: European type
6	Not used.	-
7	Non-ring reception	0: OFF 1: ON
8	Not used.	-

- **Selectors 1 and 2: Off-hook alarm**
  These selectors activate or deactivate the alarm function which sounds an alarm when the communication is completed with the handset being off the hook.
- **Selector 5: Calendar clock type**
  If this selector is set to "0" (USA), the MM/DD/YY hh:mm format applies; if it is set to "1" (Europe), the DD/MM/YY hh:mm format applies: DD is the day, MM is the month, YY is the last two digits of the year, hh is the hour, and mm is the minute.
- **Selector 7: Non-ring reception**
  Setting this selector to "1" makes the machine receive calls without ringer sound if the Ring Delay is set to 0.

5.3.19 WSW18

Selector No.	Function	Setting and Specifications
1	Header for fax	0: With header 1: Without header
2 3	Detection enabled time for CNG and no tone	**No. 2 3** 0 0 : 40 sec. 0 1 : 0 sec. (No detection) 1 0 : 5 sec. 1 1 : 80 sec.
4 5	Not used.	-
6	Registration of station ID	0: Permitted 1: Prohibited
7 8	Tone sound monitoring	**No. 7 8** 0 0 : No monitoring 0 1 : No monitoring 1 0 : Up to phase B at the calling station only 1 1 : All transmission phases both at the calling and called stations

- **Selector 1: Header for fax**
  The setting becomes effective only when do not add the header in the application of the PC.
- **Selectors 2 and 3: Detection enabled time for CNG and no tone**
  After the line is connected via the external telephone or by picking up the handset of the machine, the machine can detect a CNG signal or no tone for the time length specified by these selectors. The setting specified by these selectors becomes effective only when selector 8 on WSW20 is set to "1."
- **Selector 6: Registration of station ID**
  Setting this selector to "0" permits the registration of station ID for Austrian and Czech models.
- **Selectors 7 and 8: Tone sound monitoring**
  These selectors set monitoring specifications of the tone sound inputted from the line.

5.3.20 WSW19

Selector No.	Function	Setting and Specifications
1 to 3	First transmission speed choice for fallback	**No. 1 2 3** **No. 4 5 6** 0 0 0 : 2,400 bps 0 0 1 : 4,800 bps 0 1 0 : 7,200 bps 0 1 1 : 9,600 bps 1 0 0 : 12,000 bps 1 0 1 : 14,400 bps 1 1 0 : 14,400 bps 1 1 1 : 14,400 bps
4 to 6	Last transmission speed choice for fallback	
7	V.34 mode	0: Permitted 1: Prohibited
8	V.17 mode	0: Permitted 1: Prohibited

Note

- Selector 7 takes effect only in models supporting V.34 mode.

- **Selectors 1 through 6: First and last choices of transmission speed for fallback**
  These selectors are used to set the MODEM speed range. With the first transmission speed choice specified by selectors 1 through 3, the machine attempts to establish the transmission link via the MODEM. If the establishment fails, the machine automatically steps down to the next lowest speed and attempts to establish the transmission link again. The machine repeats this sequence while stepping down the transmission speed to the last choice specified by selectors 4 through 6.
  If the MODEM always falls back to a low transmission speed (e.g., 4,800 bps), set the first transmission speed choice to the lower one (e.g., modify it from 12,000 bps to 7,200 bps) in order to deactivate the high-speed MODEM function and reduce the training time for shorter transmission time.
  Generally, to save the transmission time, set the last transmission speed choice to a higher one.
- **Selector 7: V.34 mode**
  If this selector is set to "0," selectors 5 through 8 on the WSW38 through WSW40 and on WSW41, will become effective.

5.3.21 WSW20

Selector No.	Function	Setting and Specifications
1	EP* tone prefix	0: OFF 1: ON
2	Overseas communications mode (Reception)	0: 2100 Hz 1: 1100 Hz
3	Overseas communications mode (Transmission)	0: OFF 1: Ignores DIS once.
4 5	Min. time length from reception of CFR to start of transmission of video signals	**No. 4 5** 0 0 : 100 ms 0 1 : 200 ms 1 0 : 300 ms 1 1 : 400 ms
6 7	Not used.	-
8	Limitation on CNG detection	0: OFF 1: ON

* EP: Echo protection

- **Selector 1: EP tone prefix**

  Setting this selector to "1" makes the machine transmit a 1700 Hz echo protection (EP) tone immediately preceding training in V.29 modulation system to prevent omission of training signals.

  Prefixing an EP tone is useful when the machine fails to transmit at the V.29 modem speed and always has to fall back to 4800 bps transmission.

  The setting made by this selector takes effect only when the Overseas Mode is set to ON.

- **Selectors 2 and 3: Overseas communications mode**

  These selectors should be used if the machine malfunctions in overseas communications. According to the communications error state, select the signal specifications.

  Setting selector 2 to "1" allows the machine to use 1100 Hz CED signal instead of 2100 Hz in receiving operation. This prevents malfunctions resulting from echoes, since the 1100 Hz signal does not disable the echo suppressor (ES) while the 2100 Hz signal does.

  Setting selector 3 to "1" allows the machine to ignore a DIS signal sent from the called station once in sending operation. This operation suppresses echoes since the first DIS

signal immediately follows a 2100 Hz CED (which disables the ES) so that it is likely to be affected by echoes in the disabled ES state. However, such a disabled ES state will be removed soon so that the second and the following DIS signals are not susceptible to data distortion due to echoes. Note that some models when called may cause error by receiving a self-outputted DIS.

The setting made by selector 3 takes effect only when the Overseas Communications Mode is set to ON. (The setting made by selector 2 is always effective.)

- **Selectors 8: Limitation on CNG detection**

  If this selector is set to "1," the machine detects a CNG signal according to the condition preset by selectors 2 and 3 on WSW18 after a line is connected. If it is set to "0," the machine detects a CNG signal as long as the line is connected.

5.3.22 WSW21

Selector No.	Function	Setting and Specifications
1 to 5	Not used.	-
6 7	Not used.	-
8	Erasure of message stored in the memory after the message transfer	0: Yes 1: No

- **Selector 8: Erasure of message stored in the memory after the message transfer**

  Setting this selector to "0" will erase the message recorded in the memory after the document retrieval feature transfers the message.

5.3.23 WSW22

Selector No.	Function	Setting and Specifications
1	ECM* in sending	0: Valid 1: Invalid
2	ECM* in receiving	0: Valid 1: Invalid
3	Call Waiting Caller ID	0: Displayed 1: Not displayed
4 to 8	Not used.	-

* ECM: Error correction mode

Note

- Selector 3 is applicable to the American models only.

- **Selector 3: Call Waiting Caller ID**

  Setting this selector to "0" allows the user to decide whether or not to interrupt the current call when a new call comes in. If Call Waiting Caller ID service is available in the area and the user subscribes to it, he/she can see information about his/her incoming call on the LCD.

5.3.24 WSW23

Selector No.	Function	Setting and Specifications
1	Starting point of training check (TCF)	0: 0 From the head of a series of zeros 1: From any arbitrary point
2 3	Allowable training error rate	**No. 2 3** 0 0 : 0 % 0 1 : 0.5 % 1 0 : 1 % 1 1 : 2 %
4 5	Decoding error rate for transmission of RTN	**No. 4 5** 0 0 : 16 % 0 1 : 14% 1 0 : 10 % 1 1 : 8 %
6 7	Not used.	-
8	Limitation of attenuation level	0: Yes 1: No

Note

- Selector 8 is not applicable to the French models.

- **Selector 1: Starting point of training check (TCF)**
  At the training phase of receiving operation, the called station detects for 1.0 second a training check (TCF) command, a series of zeros which is sent from the calling station for 1.5 seconds to verify training and give the first indication of the acceptability of the line. This selector sets the starting point from which the called station should start counting those zeros. If this selector is set to "0," the called station starts counting zeros 100 ms after the head of a series of zeros is detected.
  If it is set to "1," the called station starts counting zeros upon detection of 10-ms successive zeros 50 ms after the head of a series of zeros is detected. In this case, if the detection of 10-ms successive zeros is too late, the data counting period will become less than 1.0 second, making the called station judge the line condition unacceptable.

- **Selectors 2 and 3: Allowable training error rate**
  The called station checks a series of zeros gathered in training (as described in Selector 1) according to the allowable training error rate set by these selectors. If the called station judges the line condition to be accepted, it responds with CFR; if not, it responds with FTT.
- **Selectors 4 and 5: Decoding error rate for transmission of RTN**
  The machine checks the actual decoding errors and then transmits an RTN according to the decoding error rate (Number of lines containing an error per page ÷ Total number of lines per page) set by these selectors.
- **Selector 8: Limitation of attenuation level**
  Setting this selector to "0" limits the transmitting level of the modem to 4 dB. This setting has priority over the settings selected by WSW02 (selectors 5 through 8) and WSW13 (selectors 5 through 8).

5.3.25 WSW24

Selector No.	Function	Setting and Specifications
1 2	Maximum OGM recording time	**No. 1 2** 0 0 : 15 sec. 0 1 : 20 sec. 1 0 : 30 sec. 1 1 : 50 sec.
3 4	Time length from CML ON to start of pseudo ring backtone transmission	**No. 3 4** 0 0 : 4 sec. 0 1 : 3 sec. 1 0 : 2 sec. 1 1 : 1 sec.
5 to 8	Not used.	-

- **Selectors 1 and 2: Maximum OGM recording time**
  These selectors set the allowable maximum recording time for an OGM.
- **Selectors 3 and 4: Time length from CML ON to start of pseudo ring backtone transmission**
  These selectors set the length of time from CML-ON up to the start of pseudo ring backtone transmission.
  In models with OGM facilities, the settings made by these selectors also apply to the length of time from CML-ON up to the start of OGM transmission.

5.3.26 WSW25

Selector No.	Function	Setting and Specifications
1 to 4	Not used.	-
5 to 7	Pause between paging number and PIN	**No. 5 6 7** 0 0 0 : 2 sec. 0 0 1 : 4 sec. 0 1 0 : 6 sec. 0 1 1 : 8 sec. 1 0 0 : 10 sec. 1 0 1 : 12 sec. 1 1 0 : 14 sec. 1 1 1 : 16 sec.
8	Not used.	-

Note

- Selectors 5 through 7 are applicable to the U.S.A. models only.

- **Selectors 5 through 7: Pause between paging number and PIN**
  These selectors set the pause time between a telephone number being paged and PIN (personal identification number) for the paging feature.

5.3.27 WSW26

Selector No.	Function	Setting and Specifications
1 2	Not used.	-
3	Dialing during document reading into the temporary memory in in-memory message transmission	0: Disable 1: Enable
4 5	No. of CNG cycles to be detected (when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone)	**No. 4 5** 0 0 : 0.5 (A) 0 1 : 1 (B) 1 0 : 1.5 (C) 1 1 : 2 (D) The number of times changes by the selector 3 of the WSW54. (☛p.5-106 "WSW54")
6 7	No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode)	**No. 6 7** 0 0 : 0.5 (A) 0 1 : 1 (B) 1 0 : 1.5 (C) 1 1 : 2 (D)
8	Not used.	-

- **Selector 3: Dialing during document reading into the temporary memory in in-memory message transmission**
  If this selector is set to "0," the machine waits for document reading into the memory to complete and then starts dialing. This enables the machine to list the total number of pages in the header of the facsimile message.
- **Selectors 4 and 5: No. of CNG cycles to be detected (when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone)**
  The machine interprets a CNG as an effective signal if it detects the CNG by the number of cycles specified by these selectors when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone.
- **Selectors 6 and 7: No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode)**
  The machine interprets a CNG as an effective signal if it detects the CNG by the number of cycles specified by these selectors when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode.

5.3.28 WSW27

Selector No.	Function	Setting and Specifications
1	Not used.	-
2	Ringer OFF setting	0: Yes 1: No
3 to 7	Not used.	-
8	Not used.	-

5.3.29 WSW28

Selector No.	Function	Setting and Specifications
1 to 3	Transmission level of DTMF high-band frequency signal	**No. 1 2 3** 0 0 0 : 0 dB 0 0 1 : +1 dB 0 1 0 : +2 dB 0 1 1 : +3 dB 1 0 0 : 0 dB 1 0 1 : -1 dB 1 1 0 : -2 dB 1 1 1 : -3 dB
4 to 6	Transmission level of DTMF low-band frequency signal	**No. 4 5 6** 0 0 0 : 0 dB 0 0 1 : +1 dB 0 1 0 : +2 dB 0 1 1 : +3 dB 1 0 0 : 0 dB 1 0 1 : -1 dB 1 1 0 : -2 dB 1 1 1 : -3 dB
7 8	Not used.	-

- **Selectors 1 through 6: Transmission level of DTMF high-/low-band frequency signal**
  These selectors are intended for the manufacturer who tests the machine for the Standard. Never access them.

5.3.30 WSW29

Not used.

5.3.31 WSW30

Selector No.	Function	Setting and Specifications
1 to 4	Not used.	-
5	Drum cleaning alarm	0: ON 1: OFF
6 7	Not used.	-
8	Density adjustment of the copy for text mode	0: Normal 1: Thickening

- **Selector 8: Density adjustment of the copy for text mode**
  When copy the thin document, thicken the contrast and print it.

5.3.32 WSW31

Selector No.	Function	Setting and Specifications
1	Not used.	-
2	Default reduction rate for failure of automatic reduction during recording	0: 100 % 1: 75 %
3	Not used.	-
4	(Do not disturb this selector.)	-
5	Not used.	-
6 to 7	Not used.	-
8	Drum life indication	0: No 1: Yes

- **Selector 2: Default reduction rate for failure of automatic reduction during recording**
  This selector sets the default reduction rate to be applied if the automatic reduction function fails to record one-page data sent from the calling station in a single page of the current recording paper.
  If it is set to "0," the machine records one-page data at full size (100%) without reduction; if it is set to "1," the machine records it at 70% size.

5.3.33 WSW32

Selector No.	Function	Setting and Specifications
1 to 4	Not used.	-
5 6	Default resolution	**No. 5 6** 0 0 : Standard 0 1 : Fine 1 0 : Super fine 1 1 : Photo
7 8	Default contrast	**No. 7 8** 0 0 : Automatic 0 1 : Automatic 1 0 : Super light 1 1 : Super dark

- **Selectors 5 and 6: Default resolution**
  These selectors set the default resolution which applies when the machine is turned on or completes a transaction.
- **Selectors 7 and 8: Default contrast**
  These selectors set the default contrast which applies when the machine is turned on or completes a transaction.

5.3.34 WSW33

Selector No.	Function	Setting and Specifications
1 to 5	Not used.	-
6	Report output of polled transmission requests	0: Yes 1: No
7 8	Not used.	-

5.3.35 WSW34

Selector No.	Function	Setting and Specifications
1 to 5	Not used.	-
6 7	Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation	**No. 6 7** 0 0 : 3 0 1 : 2 1 0 : 1 1 1 : OFF
8	Not used.	-

- **Selectors 6 and 7: Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation**
  If the machine receives this specified number of DTMF tone signals during external TAD operation, it will not detect CNG afterwards.
  If these selectors are set to "1, 1," the CNG detection will not be inhibited.

5.3.36 WSW35

Not used.

5.3.37 WSW36

Selector No.	Function	Setting and Specifications
1 to 3	Not used.	-
4	Not used.	-
5	Escape from phase C	0: Yes 1: No
6 to 8	Extension of incoming calling signal (CI) frequency band specified by selectors 1 through 4 on WSW14	**No. 6 7 8** 0 0 0 : 0 (Ignored) 0 0 1 : 4 (448 Hz) 0 1 0 : 8 (244 Hz) 0 1 1 : 12 (162 Hz) 1 0 0 : 16 (122 Hz) 1 0 1 : 20 (97 Hz) 1 1 0 : 24 (81 Hz) 1 1 1 : 28 (69 Hz)

- **Selector 5: Escape from phase C**
  This selector determines whether or not the machine will escape from phase C when it detects an RTC (Return to Control) in non-ECM mode or an RCP (Return to Control Partial page) in ECM mode.
- **Selectors 6 through 8: Extension of incoming calling signal (CI) frequency band specified by selectors 1 through 4 on WSW14**
  At the start of reception, if the machine detects the frequency of a CI signal specified by selectors 1 through 4 on WSW14, it starts the ringer sounding. However, the machine may fail to detect the CI signal normally due to noise superimposed at the time of reception. To prevent it, use selectors 6 through 8 on WSW36.
  If the machine detects higher frequencies than the setting made here, it regards them as noise and interprets the detecting state as being normal, allowing the ringer to keep sounding according to the preset number of ringers (until it starts automatic reception of FAX data in the FAX mode or enters the TAD mode in the TEL mode).

5.3.38 WSW37

Selector No.	Function	Setting and Specifications
1	Printout of the stored image data of an unsent document onto an error report	0: No 1: Yes
2	Erasure of the stored image data of an unsent document at the time of the subsequent in-memory message transmission	0: No 1: Yes
3 to 8	Not used.	-

- **Selector 1: Printout of the stored image data of an unsent document onto an error report**
  This selector determines whether or not to print out the 1st-page image data of a document onto the error report if the document image data stored in the temporary memory cannot be transmitted normally.
- **Selector 2: Erasure of the stored image data of an unsent document at the time of the subsequent in-memory message transmission**
  If in-memory message transmission fails repeatedly when selector 1 is set to "1," the temporary memory will be occupied with image data. Setting selector 2 to "1" will automatically erase the stored 1st-page image data of an unsent document at the time of the subsequent in-memory message transmission only when recording paper or toner runs out.

5.3.39 WSW38

Selector No.	Function	Setting and Specifications
1 2	Setting of the equalizer	**No. 1 2** 0 0 : Automatic 0 1 : Automatic 1 0 : Fixed to 4 points 1 1 : Fixed to 16 points
3	Sending level of guard tone at phase 2	0: Normal - 7 db 1: Normal
4	Stepping down the transmission speed at fallback each	0: 2,400 bps 1: 4,800 bps
5 6	Automatic control of modem's EQM gain for proper transmission speed choice	**No. 5 6** 0 0 : For higher transmission speed than the current setting 0 1 : No change from the current setting 1 0 : For lower transmission speed than the current setting 1 1 : For further lower transmission than the setting made by 1, 0
7	Redialing when a communications error occurs	0: ON 1: OFF
8	Detection of CED for stopping CNG	0: ON 1: OFF

Note

- WSW38 takes effect only when the V.34 mode is permitted (WSW19, selector 7) in models supporting V.34 mode.

- **Selectors 1 and 2: Setting of the equalizer**

  These selectors set the equalizer's training level to be applied if the machine fails to send training due to weak line connection. If these selectors are set to "0, X," the modem will automatically set the appropriate training level.

- **Selector 3: Sending level of guard tone at phase 2**
  This selector sets the sending level of guard tone for 1800 Hz to be sent at Phase 2 in the V. 34 mode.
- **Selector 4: Stepping down the transmission speed at fallback each**
  This selector determines how much the modem steps down the transmission speed at fallback when called by the remote station. If this selector is set to "1," the modem may step down the transmission speed from 33600 bps to 28800 bps by one-time fallback.
- **Selectors 5 and 6: Automatic control of modem's EQM gain for proper transmission speed choice**
  These selectors determine how the modem controls the EQM (Eye Quality Monitor) gain for proper choice of the transmission speed, which applies if the modem selects higher transmission speed than the possible speed so that it always repeats falling back.
- S**elector 8: Detection of CED for stopping CNG**
  If this selector is set to "0," the detection time of CED specified by WSW43, selectors 4 and 5 will apply.

5.3.40 WSW39

Selector No.	Function	Setting and Specifications
1 to 4	First transmission speed choice for fallback	**No. 1 2 3 4** **No. 5 6 7 8** 0 0 0 0 : 2,400 bps 0 0 0 1 : 4,800 bps 0 0 1 0 : 7,200 bps 0 0 1 1 : 9,600 bps 0 1 0 0 : 12,000 bps 0 1 0 1 : 14,400 bps 0 1 1 0 : 16,800 bps 0 1 1 1 : 19,200 bps 1 0 0 0 : 21,600 bps 1 0 0 1 : 24,000 bps 1 0 1 0 : 26,400 bps 1 0 1 1 : 28,800 bps 1 1 0 0 : 31,200 bps 1 1 0 1 : 33,600 bps 1 1 1 0 : 33,600 bps 1 1 1 1 : 33,600 bps
5 to 8	Last transmission speed choice for fallback	-

Note

- WSW39 takes effect only when the V.34 mode is permitted (WSW19, selector 7) in models supporting V.34 mode. For the transmission speed setting in other modes, refer to WSW19.

- **Selectors 1 through 8: First and last choices of transmission speed for fallback**
  These selectors are used to set the modem speed range. With the first transmission speed choice specified by selectors 1 through 4, the machine attempts to establish the transmission link via the modem. If the establishment fails, the machine automatically steps down to the next highest speed and attempts to establish the transmission link again. The machine repeats this sequence while stepping down the transmission speed to the last choice specified by selectors 5 through 8.

If the modem always falls back to a low transmission speed (e.g., 24,000 bps), set the first transmission speed choice to the lower one (e.g., modify it from 31,200 bps to 26,400 bps) in order to deactivate the high-speed modem function and reduce the training time for shorter transmission time.
WSW39 will be limited by selectors 3 through 8 on WSW40.

5.3.41 WSW40

Not used.

5.3.42 WSW41

Not used.

5.3.43 WSW42

Selector No.	Function	Setting and Specifications
1 to 3	Not used.	-
4	JBIG encoding system	0: Not allowed 1: Allowed
5 to 8	Not used.	-

5.3.44 WSW43

Selector No.	Function	Setting and Specifications
1	Not used.	-
2 3	Wait time for PC-Fax reception (Class 2) and FPTS command transmission	**No. 2 3** 0 0 : 50 ms 0 1 : 100 ms 1 0 : 150 ms 1 1 : 0 ms
4 5	Detection time of 2100 Hz CED or ANSam	**No. 4 5** 0 0 : 200 ms 0 1 : 300 ms 1 0 : 400 ms 1 1 : 500 ms
6 to 8	Not used.	-

5.3.45 WSW44

Not used.

5.3.46 WSW45

Not used.

5.3.47 WSW46

Not used.

5.3.48 WSW47

Selector No.	Function	Setting and Specifications
1 to 7	Not used.	-
8	Switching between high-speed USB and full-speed USB	0: Auto switching between high-speed USB (ver. 2.0) and full-speed USB (ver. 1.1) 1: Fixed to full-speed USB (ver. 1.1)

5.3.49 WSW48

Not used.

5.3.50 WSW49

Selector No.	Function	Setting and Specifications
1 2	RAM disc size in PCL/ PS (only M085)	**No. 1 2** 0 0 : None 0 1 : 1MB 1 0 : 2MB 1 1 : 4MB
3	End-of-copying beep	0: Yes 1: No
4 5	Command flag detection time	**No. 4 5** 0 0 : 150 ms 0 1 : 350 ms 1 0 : 550 ms 1 1 : 750 ms
6 to 8	Not used.	-

- **Selectors 4 and 5: Command flag detection time**
  After receiving a command flag, the machine will wait for the command that should follow for the time length specified by these selectors.

5.3.51 WSW50

Not used.

5.3.52 WSW51

Selector No.	Function	Setting and Specifications
1	Output of communications error report when transmission verification report is disabled	0: Enable1: Disable
2 to 8	Not used.	-

5.3.53 WSW52

Not used.

5.3.54 WSW53

Selector No.	Function	Setting and Specifications
1 to 6	Not used.	-
7	CNG detection retry after invalid CNG detected	0: Yes 1: No
8	Not used.	-

5.3.55 WSW54

Selector No.	Function	Setting and Specifications
1 2	Not used.	-
3	More CNG detection cycles in user-friendly reception	0: No 1: 2 more cycles
4	Not used.	-
5 6	Caller ID tone alert detection time length	**No. 5 6** 0 0 : 50 ms (default) 0 1 : 60 ms 1 0 : 70 ms 1 1 : 80 ms
7 8	Not used.	-

Note

- Selectors 5 through 7 are applicable only to models designed for the UK market.

- **Selector 3: More CNG detection cycles in user-friendly reception**
  If CNG detection fails even after adjustment of selectors 4 and 5 on WSW26, try adding 2 more cycles to the permitted number of CNG detection cycles.
- **Selectors 5 and 6: Caller ID tone alert detection time length**
  In the event of a false detection of a caller ID tone alert, adjust the detection time length.

5.3.56 WSW55

Selector No.	Function	Setting and Specifications
1 to 8	Interval of time required for the developing bias voltage correction (hour)	0: The developing bias voltage correction is performed on each print job. 1-72: The developing bias voltage correction is performed when a print job occurs at specified time or later. 73-254: Not allowed to set. 255 (0xFF): The developing bias voltage correction is not performed.

The setting example of the selector number is as follows;

No. 1 2 3 4 5 6 7 8

0 0 0 0 0 0 0 0 : The developing bias voltage correction is performed on each print job.

0 0 0 1 1 0 0 0 : The developing bias voltage correction is performed when a print job occurs after 24 hours (default value) or later.

0 0 0 1 0 0 1 0 : The developing bias voltage correction is performed when a print job occurs after 72 hours or later.

1 1 1 1 1 1 1 1 : The developing bias voltage correction is not performed.

- **Selector 1 to 8: Interval of time required for the developing bias voltage correction**
  To keep the density of four colors evenly, the developing bias voltage correction is performed when a print job occurs at specified time or later.

5.3.57 WSW56

Selector No.	Function	Setting and Specifications
1 2	Not used.	-
3	"Last Job Reprint" function setting	0: Invalid1: Valid
4 to 8	Not used.	-

- **Selector 3: "Last Job Reprint" function setting**
  Setting this selector to "0" makes the machine not to reprint the "Last Job Print" data such as confidential document in order to prevent the misuse.

5.3.58 WSW57

Not used.

5.3.59 WSW58

Selector No.	Function	Setting and Specifications
1 to 6	Not used.	-
7 8	Synchronous of DTMF detecting	**No. 7 8** 0 0 : 2 0 1 : 3 (Default) 1 0 : 4 1 1 : 5

5.3.60 WSW59

Selector No.	Function	Setting and Specifications
1	USB serial number (SN) transmission enabled/disabled	0: USB serial number transmitted/ USB serial number not transmitted 1: Frame length selection
2	Extension of waiting time between the ANSam-DIS	0: Valid 1: Invalid
3 to 8	Not used.	-

- **Selector 1: Frame length selection**
  This is intended to prevent the problem of a continued increase in USB ports when serial numbers are transmitted from the MFC to a Windows Vista-based PC.
  It is intended only to prevent a problem specific to Windows Vista; its default setting is "0: USB SN enabled."
- **Selector 2: Extension of waiting time between the ANSam-DIS**
  When send from the G3 to the FAX machine of the G4, extend the waiting time between the ANSam-DIS from 75ms to 450ms in expectation of the switching time of the echo canceller of sending side. its default setting is "0: Valid"

5.3.61 WSW60

Not used.

5.3.62 WSW61

Not used.

5.3.63 WSW62

Not used.

5.3.64 WSW63

Not used.

TROUBLESHOOTING

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

6. TROUBLESHOOTING

6.1 INTRODUCTION

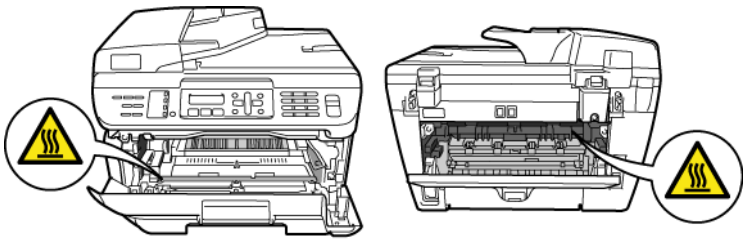
Troubleshooting is the countermeasure procedures that the service personnel should follow if an error or malfunction occurs with the machine. It is impossible to anticipate all of the possible problems which may occur in future and determine the troubleshooting procedures, so this chapter covers some sample problems. However, these samples will help the service personnel pinpoint and repair other defective elements.

6.1.1 PRECAUTIONS

Be sure to observe and follow all the precautions to prevent any secondary problems from happening during troubleshooting.

1. Always turn off the power and unplug the power cable before removing any covers or PCBs, adjusting the machine and so on. If you need to take voltage measurements with the power switched on, take the greatest of care not to receive an electric shock.
2. When connecting or disconnecting cable connectors, make sure that you hold the connector body and not the cables.
3. Electronic devices are sensitive to static build up; make sure that you touch a metal portion of the machine to discharge yourself before accessing the PCBs. Handle PCBs with care when repairing them.
4. Ensure all Warnings are followed.

The fuser unit becomes extremely hot during operation. Wait until it has cooled down sufficiently before replacing consumable items. DO NOT remove or damage the caution label located on or around the fuser.



m085r153

5. Verify again that the repaired portion works properly.

6.1.2 INITIAL CHECK

Check the following items before attempting to repair the machine.

- Paper
  1. A recommended type of paper is being used.
     See “Appendices” for the following information:
     Paper
  2. The paper is not damp.
  3. The paper is not short-grained paper or acid paper.
- Consumable Parts
  1. The drum unit (including the toner cartridge) is installed correctly.
- Cleaning
  Use a soft dry cloth.

⚠CAUTION
DO NOT use flammable substances such as alcohol, benzine, thinner or any type of spray to clean the inside or outside of the machine. Doing this may cause a fire or electrical shock.

6.2 ERROR CAUSE

This machine includes a self-diagnosis function. If the machine does not work normally it judges that an error has occurred (For example: Print Unable 6A), and indicates the corresponding error message on the LCD, which in turn helps the end user to quickly identify the problem. The error code is possible to display by the Maintenance mode 82 (☛p.5-46 "Error Code Indication (Function code 82)").

6.2.1 ERROR INDICATION

The error codes shaded in the table below are recoverable errors if you follow the “User Check” items.

Error codes	Problem	Reference Page
50	Replacement time of the drum unit	p.6-7
56	Fuser cover opened	p.6-8
58	Fuser unit failure (Stand ready in the given time)	p.6-9
59	Fuser unit failure	p.6-9
5A	HVPS PCB ASSY failure	p.6-10
5B	New toner detecting lever malfunction	p.6-11
63	Toner cartridge is at the end of life.	p.6-12
67	Toner of the toner cartridge is low	p.6-6
68	Fuser unit failure	p.6-13
69	Fuser unit failure	p.6-13
6A	Fuser unit failure	p.6-13
6B	Fuser unit failure	p.6-13
6C	Fuser unit failure	p.6-13
6D	Fuser unit failure	p.6-13

Error codes	Problem	Reference Page
6E	Fuser unit failure	p.6-13
6F	Fuser unit failure	p.6-13
71	Polygon motor failure	p.6-15
72	BD beam detecting sensor malfunction	p.6-15
75	Machine cooling down inside	p.6-6
76	Fuser unit failure	p.6-16
77	Fuser unit failure	p.6-17
78	Fuser unit failure	p.6-17
79	No detection of the internal temperature thermistor	p.6-18
7A	No detection of main motor lock signal	p.6-18
7B	Main PCB failure	p.6-19
7D	Dirt on drum unit	p.6-19
7F	Fax paper setting mismatch	p.6-19
80	Fax paper size is small	p.6-20
84	Paper jam in rear of the machine	p.6-22
88	Paper jam inside the machine	p.6-22
8A	Paper jam in Tray 1 (T1)	p.6-25
8D	Paper jam near paper eject tray	p.6-26
9F	Paper empty	p.6-27
A1	Front cover open	p.6-28
A2	Document is too long.	p.6-29
A3	Document rear sensor is not turned on when feeding the document.	p.6-29

Error codes	Problem	Reference Page
A5	Fax scanning error (First warning only)	p.6-30
A6	Fax scanning error (The second warning that the same error with A5 occurs again)	p.6-30
AD	DMA transfer error	p.6-31
AF	FB unit home position failure	p.6-31
B0	Harness for scanning is not connected correctly.	p.6-32
B7	Detection error of scanner	p.6-32
B9	Scanning light adjustment error.	p.6-33
BB	White level data error	p.6-33
E6	NVRAM error on main PCB	p.6-34
EC	Fan performance malfunction	p.6-34
F8	Battery connection failure	p.6-35
F9	Maintenance mode 74 Non-decision	p.6-35

6.2.2 RECOVERABLE USER CHECK ERRORS

These errors are recoverable by following the message indicated on the LCD or following the items indicated in “User Check”.

Error code 67

```
Toner Low
Prepare New Toner Cartridge
```

The toner of the toner cartridge is low. (The toner sensor delects the nearly empty.)

User Check

- Prepare a new toner cartridge. If the toner is empty, Replace it.

Error code 75

```
Cooling Down
Wait for a while
```

The machine is cooling down inside for protection.

The machine indicates "Cooling Down" in one of the conditions below.

1. The temperature inside the machine is too high.
2. Both ends of the heat roller are at different temperatures.
3. The paper media is replaced with different Paper size media.

User Check

- After having passed for a while with having turned the power supply on.

6.2.3 SERVICE CALL ERRORS

Check the “User Check” items first. If the same problem occurs follow each procedure in the order of the number described in the Step column in the table below.

Error code 50

Drum End Soon

Replacement time of the drum unit. (The drum counter reached the upper limit.)

User Check

- Replace the drum unit with a new one.

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

Error code 56

```
Cover is Open
Close the Fuser Cover.
```

Fuser cover opened

User Check

- Check if the Fuser cover is closed correctly.

Step	Cause	Remedy
1	Harness connection failure of back cover switch ASSY	Check the harness connection of the back cover switch ASSY and reconnect it.
2	Eject actuator failure	Re-assemble the eject actuator
3	Eject sensor PCB ASSY failure	Replace the eject sensor PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

Error code 58/ 59

- **Error code 58**

```
Fuser Error
Turn the power off, then on again. Leave the machine for 15 min.
```

- **Error code 59**

```
Self-Diagnostic
Will Automatically Restart within 15 minutes.
```

If the same error is detected again 15 minutes later, the message below is indicated.

```
Print Unable 6A
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Fuser unit failure

* It occurs with either of 68, 69, 6A, 6B, 6C, 6D, 6E, 6F, 76 and 78.

Step	Cause	Remedy
1	Harness connection failure between fuser unit and eject sensor PCB	Check the harness connection between the fuser unit and eject sensor PCB, and reconnect it.
2	Fuser unit failure	Replace the fuser unit.
3	LVPS PCB failure	Replace the LVPS PCB unit.
4	Eject sensor PCB ASSY failure	Replace the eject sensor PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

Error code 5A

```
Print Unable 5A
See Troubleshooting and routine maintenance chapter in User's Guide.
```

HVPS PCB failure (Developing bias voltage failure)

Step	Cause	Remedy
1	HVPS PCB ASSY harness connection failure	Check the harness connection between the HVPS PCB and main PCB. Then, reconnect them.
2	HVPS PCB failure	Replace the HVPS PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

Error code 5B

```
Cartridge Error
Put the Black Toner Cartridge back in.
```

New toner detection lever malfunction

User Check

- Check if the toner cartridge is attached.

Step	Cause	Remedy
1	New toner detection switch harness connection failure	Check the harness connection of the new toner detection switch. Then, reconnect it.
2	New toner detection switch failure	Replace the new toner harness ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

Error code 63

```
Toner Life End
Replace Toner Cartridge.
```

Toner cartridge is at the end of its life.

(The toner sensor detects the nearly empty, or the drum counter reached the upper limit.)

User Check

- Gently shake the toner cartridge from side to side and install it again.
- Replace the toner cartridge.

Step	Cause	Remedy
1	Harness connection failure of new toner sensor harness ASSY.	Check the sensor performance (☛p.5-19 "Operational Check of Sensors (Function code 32)"). If any problem occurs, check the harness connection of the new toner sensor harness ASSY, then reconnect it.
2	Harness connection failure of toner sensor PCB unit ASSY.	Check the sensor performance (☛p.5-19 "Operational Check of Sensors (Function code 32)"). If any problem occurs, check the harness connection of the toner sensor PCB unit ASSY, then reconnect it.
3	New toner sensor harness ASSY failure (Toner empty)	Replace the new toner sensor harness ASSY.
4	Toner sensor PCB unit ASSY failure.	Replace the toner sensor PCB unit ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

Error code 68/ 69/ 6A/ 6B/ 6C/ 6D/ 6E/ 6F

- **Error code 68**

```
Print Unable 68
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Fuser unit failure (The side thermistor detects higher temperature than the specified value.)

- **Error code 69**

```
Print Unable 69
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Fuser unit failure (The side thermistor detects lower temperature than the specified value.)

- **Error code 6A**

```
Print Unable 6A
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Fuser unit failure (The side thermistor does not detect 60°C within the specified time.)

- **Error code 6B**

```
Print Unable 6B
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Fuser unit failure (The center thermistor does not detect 100°C within the specified time.)

- **Error code 6C**

```
Print Unable 6C
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Fuser unit failure (The center thermistor detects higher temperature than the specified value.)

- **Error code 6D**

```
Print Unable 6D
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Fuser unit failure (The center thermistor detects lower temperature than the specified value.)

- **Error code 6E**

```
Print Unable 6E
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Fuser unit failure (The center thermistor does not detect temperature rising within the specified time.)

- **Error code 6F**

```
Print Unable 6F
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Fuser unit failure (The center and side thermistors detect extremely high temperature.)

Step	Cause	Remedy
1	Fuser unit harness connection failure	Check the harness connection of the fuser unit and reconnect it.
2	Fuser unit failure	Replace the fuser unit.
3	LVPS PCB unit failure	Replace the LVPS PCB unit.
4	Main PCB failure	Replace the main PCB ASSY.

Error code 71/ 72

- **Error code 71**

```
Print Unable 71
See Troubleshooting and routine maintenance chapter in User's Guide.
```

Laser unit Polygon mirror motor failure
(Cannot detect the period signal of the polygon mirror motor.)

- **Error code 72**

```
Print Unable 72
See Troubleshooting and routine maintenance chapter in User's Guide.
```

BD beam detect sensor malfunction

Step	Cause	Remedy
1	Laser unit harness connection failure	Check the two harness connections of the laser unit and reconnect them.
2	Laser unit failure	Replace the laser unit.
3	Main PCB failure	Replace the main PCB ASSY.

Error code 76

```
Print Unable 76
See Troubleshooting and routine maintenance chapter in User's Guide.
```

Fuser unit failure (The center thermistor detects rapidly rising temperature.)

Step	Cause	Remedy
1	Fuser unit harness connection failure	Check the harness connection of the fuser unit and reconnect it.
2	Fuser unit failure	Replace the fuser unit.

Error code 77

```
Print Unable 77
See Troubleshooting and routine maintenance chapter in User's Guide.
```

Fuser error code failure (The error history of the fuser unit is deleted.)

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Main PCB failure	Replace the main PCB ASSY.

Error code 78

```
Print Unable 78
See Troubleshooting and routine maintenance chapter in User's Guide.
```

Fuser unit failure (The temperature sensor of the fuser unit is broken.)

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Main PCB failure	Replace the main PCB ASSY.

Error code 79

```
Print Unable 79
See Troubleshooting and routine maintenance chapter in User's Guide.
```

No detection of the internal temperature thermistor.

Step	Cause	Remedy
1	Harness connection failure of internal temperature thermistor	Check the harness connection of the internal temperature thermistor, and reconnect it.
2	Internal temperature thermistor failure	Replace the internal temperature thermistor.
3	Main PCB failure	Replace the main PCB ASSY.

Error code 7A

```
Print Unable 7A
See Troubleshooting and routine maintenance chapter in User's Guide.
```

No detection of the main motor lock signal.

Step	Cause	Remedy
1	Main motor failure	Replace the main motor ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

Error code 7B

```
Print Unable 7B
See Troubleshooting and routine maintenance chapter in User's Guide.
```

Main PCB failure

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

Error code 7D

```
Drum Error
Open the front cover, then clean the corona wire of drum unit according
to the label.
```

Dirt on drum unit

User Check

- Clean the corona wire of the drum unit.
- Replace the drum unit with a new one.

Step	Cause	Remedy
1	Dirt or dust on drum unit electrodes	Clean the electrodes on the drum unit. (☛p.6-21 "Electrodes location on the drum unit")
2	HVPS PCB failure	Replace the HVPS PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

Error code 7F

```
Size mismatch
Fax received. Set correct paper size in menu.
```

Fax paper setting mismatch (The setting paper becomes besides the A4/Letter/Legal/Folio.)

User Check

- Set the A4/Letter/Legal/Folio using the paper size setting in menu.

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

Error code 80

```
Size mismatch
Reload correct paper, then press Start.
```

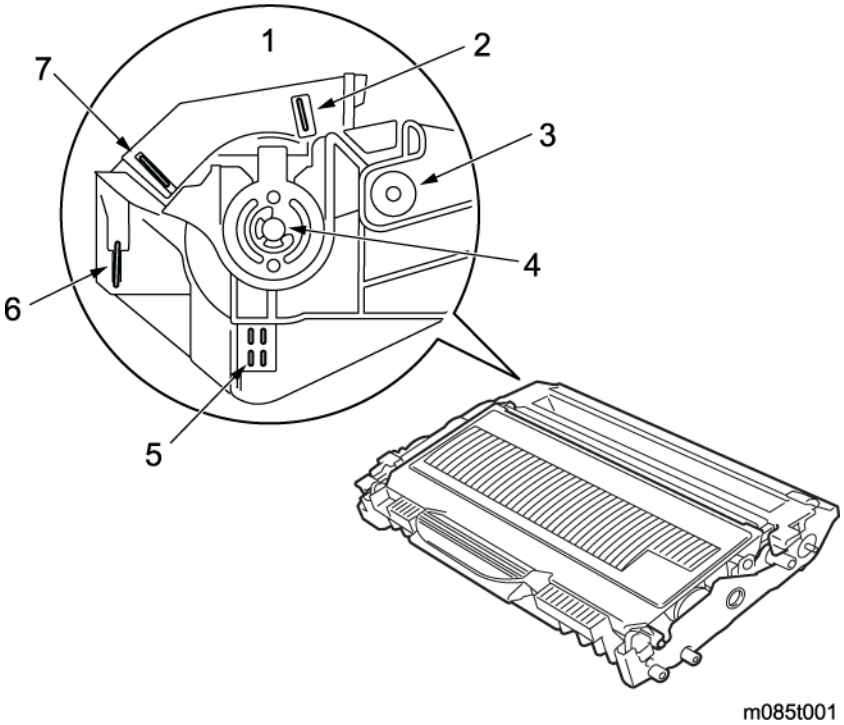
Fax paper size is incorrect (The registration rear sensor detected the paper that is smaller than the letter size.)

User Check

- Set the paper of A4 or LETTER-size on the paper tray.

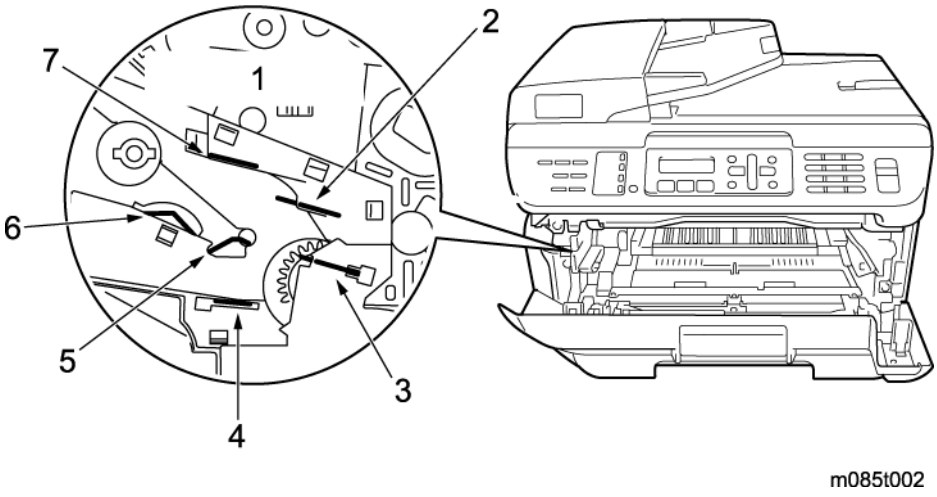
Step	Cause	Remedy
1	Registration front actuator catching in some position	Re-assemble the registration front actuator.
2	Main PCB failure	Replace the main PCB ASSY.

Electrodes location on the drum unit



1. Side surface of Drum unit
2. Charged electrode
3. Develop roller
4. Exposure drum
5. Transfer roller
6. Cleaner
7. Grid

Electrodes location on the machine



1. Side surface of Frame L ASSY inside

2. Grid
3. Cleaner
4. Transfer roller
5. Exposure drum
6. Develop roller
7. Charged electrode

<How to clean the electrodes>

Turn off the power switch. Unplug the machine from the AC power outlet, and leave the machine for a few minutes. Then, wipe the electrodes above carefully with a dry lint-free cloth. Be careful not to change the shapes of the electrodes.

Error code 84 (Jam Rear)/ 88 (Jam Inside)

- **Error code 84 (Jam Rear)**

```
Jam Rear
Open the Back Cover and remove the jammed paper.
```

Paper jam in the rear of the machine (It is detects by the eject sensor)

- **Error code 88 (Jam Inside)**

```
Jam Inside
Open the Front Cover, pull out the Drum Unit completely and remove
the jammed paper.
```

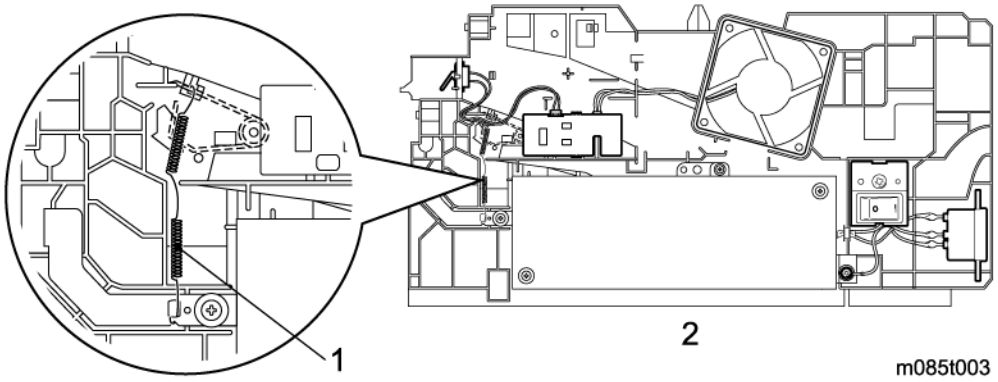
Paper jam inside the machine (It is detects by the registration rear sensor)

User Check

- Check if the paper is jammed. If there is any jammed paper, remove it.

Step	Cause	Remedy
1	Harness connection failure of registration front sensor PCB ASSY, registration rear sensor PCB ASSY or paper eject sensor PCB ASSY	Check the harness connections of the registration front sensor PCB ASSY, registration rear sensor PCB ASSY and paper eject sensor PCB ASSY, and reconnect them.

Step	Cause	Remedy
2	Registration front actuator, registration rear actuator or paper eject actuator not operating smoothly or catching in some position.	Ensure smooth operation of the registration front actuator, registration rear actuator or paper eject actuator and ensure they are not catching in any positions.
3	Paper eject sensor PCB failure	Check the sensor performance (☛p.5-19 "Operational Check of Sensors (Function code 32)"). If any problem occurs, replace the eject sensor PCB ASSY.
4	Registration front sensor PCB failure	Check the sensor performance (☛p.5-19 "Operational Check of Sensors (Function code 32)"). If any problem occurs, replace the registration front sensor PCB ASSY.
5	Registration rear sensor PCB failure	Check the sensor performance (☛p.5-19 "Operational Check of Sensors (Function code 32)"). If any problem occurs, replace the registration rear sensor PCB ASSY.
6	Registration ground spring failure	Re-assemble the registration ground spring. (Refer to figure below.)
7	Main PCB failure	Replace the main PCB ASSY.



1. Registration ground spring
2. <Main frame R ASSY>

Error code 8A

```
Jam Tray
Remove the jammed paper from Tray.
```

Paper jam in Tray 1 (T1) (It is detects by the registration front sensor)

User Check

- Check if the paper is jammed in the tray. If jammed, remove it.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.

Step	Cause	Remedy
1	Harness connection failure of registration front sensor PCB ASSY	Check the harness connection of the registration front sensor PCB ASSY in the appropriate tray, and reconnect it.
2	Paper feed roller worn out	Replace the paper feed roller.
3	Registration front sensor PCB failure	Check the sensor performance following the procedure (☛p.5-19 "Operational Check of Sensors (Function code 32)"). If any problem occurs, replace the registration front sensor PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

Error code 8D

```
Cover is open
Open the Back cover and remove the jammed paper, or close the Fuser
Cover.
```

Paper jam near paper eject tray (When power on, it is detects by the eject sensor.)

User Check

- Remove the jammed paper near the paper eject tray or the back cover.
- Close the fuser cover.

Step	Cause	Remedy
1	Paper eject actuator not operating smoothly catching in some position.	Re-assemble the paper eject actuator. Ensure the paper eject sensor operates smoothly.
2	Eject sensor PCB ASSY failure	Replace the eject sensor PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

Error code 9F

```
No paper
Reload paper, then press start.
```

Paper empty (It is detects by the registration front sensor)

User Check

- Replenish the paper in the paper tray.

Step	Cause	Remedy
1	Registration front actuator catching in some position	Re-assemble the registration front actuator.
2	Registration front sensor PCB harness connection failure	Check the harness connection of the registration front sensor PCB and reconnect it.
3	Registration front sensor PCB failure	Replace the registration front sensor PCB.
4	Main PCB failure	Replace the main PCB ASSY.

Error code A1

```
Cover is open
Close the Front Cover.
```

Front cover open

User Check

- Close the front cover.

Step	Cause	Remedy
1	Harness connection failure of cover sensor harness ASSY.	Check the harness connection of the cover sensor harness ASSY, and reconnect it.
2	Cover sensor harness ASSY failure	Replace the cover sensor harness ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

Error code A2

```
Document Jam.
Clear the scanner jam, then press the Stop Key.
```

The document is too long. (During scanning, 90 cm or longer of a document is detected.)

User Check

- Check if the document is jammed in the ADF. If it is jammed, remove it.

Step	Cause	Remedy
1	Document rear actuator not operating smoothly or catching in some position.	Ensure smooth operation and that there is no catching of document rear actuator.

Error code A3

```
Document Jam.
Clear the scanner jam, then press the Stop Key.
```

Document rear sensor is not turned on when feeding the document.

User Check

- Check if the document is jammed in the ADF. If it is jammed, remove it.

Step	Cause	Remedy
1	Document rear actuator not operating smoothly or catching in some position.	Ensure smooth operation and that there is no catching of document rear actuator.
2	Document rear sensor failure.	Replace the document rear sensor.
3	ADF motor failure	Replace the ADF motor.

Error code A5

```
Scan Unable A5
Remove the original document. Turn the power off, then on again.
```

Fax scanning error (First warning only)

Step	Cause	Remedy
1	Scanning failure	Turn the power switch off and on. Then, try scanning again.

Error code A6

```
Scan Unable A6
Remove the original document. Turn the power off, then on again.
```

Fax scanning error (After the A5 error occurs, the same problem occurs again even after turning the power off and on.)

Step	Cause	Remedy
1	FB unit failure	Replace the FB unit.
2	Main PCB failure	Replace the main PCB ASSY.

Error code AD

```
Scan Unable AD
Remove the original document, Turn the power off, then on again.
```

DMA transfer error

Step	Cause	Remedy
1	FB unit failure	Replace the FB unit.
2	Main PCB failure	Replace the main PCB ASSY

Error code AF

```
Scan Unable AF
Remove the original document. Turn the power off, then on again.
```

FB unit home position failure

Step	Cause	Remedy
1	FB unit failure	Replace the FB unit.
2	Main PCB failure	Replace the main PCB ASSY.

Error code B0

Scanner Error

Harness for scanning is not connected correctly.

* This error is indicated on the LCD in the maintenance mode.

Step	Cause	Remedy
1	Scanner harness not connected correctly.	Reconnect the scanner harness correctly.
2	Scanner harness broken	Replace the FB unit.
3	Main PCB failure	Replace the main PCB ASSY.

Error code B7

Scanner Error

Detection error of scanner (Scanning reference voltage adjustment malfunction.)

* This error is indicated on the LCD in the maintenance mode.

Step	Cause	Remedy
1	FB unit failure	Replace the FB unit.
2	Main PCB failure	Replace the main PCB ASSY.

Error code B9

Scanner Error

Scanning light adjustment error is detected.

* This error is indicated on the LCD in the maintenance mode.

Step	Cause	Remedy
1	FB unit failure	Replace the FB unit.
2	Main PCB failure	Replace the main PCB ASSY.

Error code BB

Scanner Error

White level data error

* This error is indicated on the LCD in the maintenance mode.

Step	Cause	Remedy
1	FB unit failure	Replace the FB unit.
2	Main PCB failure	Replace the main PCB ASSY.

Error code E6

```
Init Unable E6
See Troubleshooting and routine maintenance chapter in User's Guide.
```

NVRAM error on main PCB

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

Error code EC

```
Print Unable EC
See Troubleshooting and routine maintenance chapter in User's Guide.
```

Fan performance malfunction

Step	Cause	Remedy
1	Harness connection failure of fan motor	Check the harness connection of the fan motor, and reconnect it.
2	Fan motor failure	Replace the fan motor.
3	Main PCB failure	Replace the main PCB ASSY.

Error code F8

Machine Error F8

Battery connection failure

Step	Cause	Remedy
1	Battery harness connection failure	Reconnect the battery harness.
2	Battery exhausted	Replace the battery.
3	Main PCB failure	Replace the main PCB ASSY.

Error code F9

Machine Error F9

Maintenance mode 74 Non-decision (Inputting omission of the customizing code.)

Step	Cause	Remedy
1	Turn the power off, when the Maintenance mode 74 is in progress.	Implement the Maintenance mode 74 again.

6.3 PAPER FEEDING PROBLEMS

Problems related to paper feeding are end user recoverable if following the “User Check” items. If the same problem occurs again, follow each procedure in the order of the number described in the "Possible cause and Remedy".

6.3.1 NO FEEDING

Possible cause and Remedy

1. Edge actuator catching in some position
   - Does the edge actuator move smoothly?
     No: Re-assemble the edge actuator and ensure smooth operation.
2. Roller holder ASSY catching in some position
   - Does the roller holder ASSY move smoothly?
     Yes: Re-assemble the roller holder ASSY and ensure smooth operation.
3. Registration front sensor failure
   - Is the problem solved after replacing the registration front sensor PCB ASSY?
     Yes: Replace the registration front sensor PCB ASSY.
4. Paper feeding kit failure
   - Is the surface of the separation pad or the pickup roller dirty or worn out?
     Yes: 1) Clean the surface of the separation pad or pickup roller. 2) Replace the separation pad or pickup roller.
5. Pressure plate gear damage
   - Is the pressure plate gear damaged?
     Yes: Replace the paper tray.
6. T1 solenoid failure
   - Does the T1 solenoid work correctly?
     No: Replace the T1 solenoid
7. T1 solenoid Circuit of the high-voltage power supply PCB broken
   - Is the problem solved after replacing the high-voltage power supply PCB ASSY?
     Yes: Replace the high-voltage power supply PCB ASSY.
8. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?
     Yes: Replace the main PCB ASSY
9. Main motor failure
   - Is the problem solved after replacing the drive sub ASSY?
     Yes: Replace the drive sub ASSY.

6.3.2 DOUBLE FEEDING

Possible cause and Remedy

1. Paper feeding kit is abrasion
   - Is the surface of the separation pad worn out?
     Yes: Replace the paper feeding kit.

6.3.3 PAPER JAM

Paper jam in the paper tray and front cover

Possible cause and Remedy

1. Registration front actuator/edge actuator catching in some position
   - Does the registration front actuator/edge actuator move smoothly?
     No: Re-assemble the registration front actuator/edge actuator and ensure smooth operation.
2. Registration front sensor PCB (registration front actuator/edge actuator failure)
   - Does the registration front sensor move smoothly? (☛p.5-19 "Operational Check of Sensors (Function code 32)")
     No: Replace the registration front sensor PCB ASSY.
3. Registration solenoid failure
   - Is the problem solved after replacing the registration solenoid?
     Yes: Replace the registration solenoid.
4. Toner LED PCB ASSY failure
   - Is the problem solved after replacing the toner LED PCB ASSY?
     Yes: Replace the toner LED PCB ASSY.
5. High-voltage power supply PCB failure
   - Is the problem solved after replacing the High-voltage power supply PCB ASSY?
     Yes: Replace the High-voltage power supply PCB ASSY.
6. Registration ground spring loose
   - Is the registration ground spring fitted correctly?
     No: Fit the registration ground spring correctly. (☛p.6-22 "Error code 84 (Jam Rear)/ 88 (Jam Inside)")
7. Main PCB failure
   - Is the problem solved after replacing the Main PCB ASSY?
     Yes: Replace the Main PCB ASSY.

Paper jam in the back cover and paper eject section

Possible cause and Remedy

1. Foreign object around fuser unit
   - Is there a foreign object around the fuser unit?

     Yes: Remove the foreign object.
2. Paper eject actuator failure
   - Does the paper eject actuator move smoothly? Is it damaged?

     No: Replace the paper eject actuator.
3. Fuser cover ASSY loose
   - Is the fuser cover ASSY fitted correctly?

     No: Fit the fuser cover ASSY correctly.
4. Outer chute ASSY loose
   - Is the outer chute ASSY fitted correctly?

     No: Fit the outer chute ASSY fitted correctly.
5. Eject roller 2 malfunction
   - Is each pinch roller of the inner chute ASSY attached to each eject roller 2 of top cover ASSY properly?

     No: Replace the inner chute ASSY.
6. Paper eject sensor PCB failure
   - Is the problem solved after replacing the paper eject sensor PCB?

     Yes: Replace the paper eject sensor PCB ASSY.

Dirt on paper

User Check

- Check if the paper is loaded into the paper tray correctly.
- Turn over the stack of paper in the paper tray, or try rotating the paper 180° in the paper tray.

Possible cause and Remedy

1. Fuser unit dirty
   - Is there dirt around the entrance of the fuser unit?

     Yes: Clean the entrance of the fuser unit.
   - Is the pressure roller ASSY dirty?

     Yes: Clean the pressure roller ASSY.

Wrinkles or creases

User Check

- Check if the paper is loaded into the paper tray correctly.
- Turn over the stack of paper in the paper tray, or try rotating the paper 180° in the paper tray.

Possible cause and Remedy

1. Fuser unit dirty
   - Is there dirt around the entrance of the fuser unit?
     Yes: Clean the entrance of the fuser unit.
2. Fuser unit failure
   - Is the problem solved if new fuser unit is replaced?
     Yes: Replace the fuser unit.

Waves in the paper / folds in the paper at the eject roller 2

User Check

- Check that the problem is solved if new paper is used.

Possible cause and Remedy

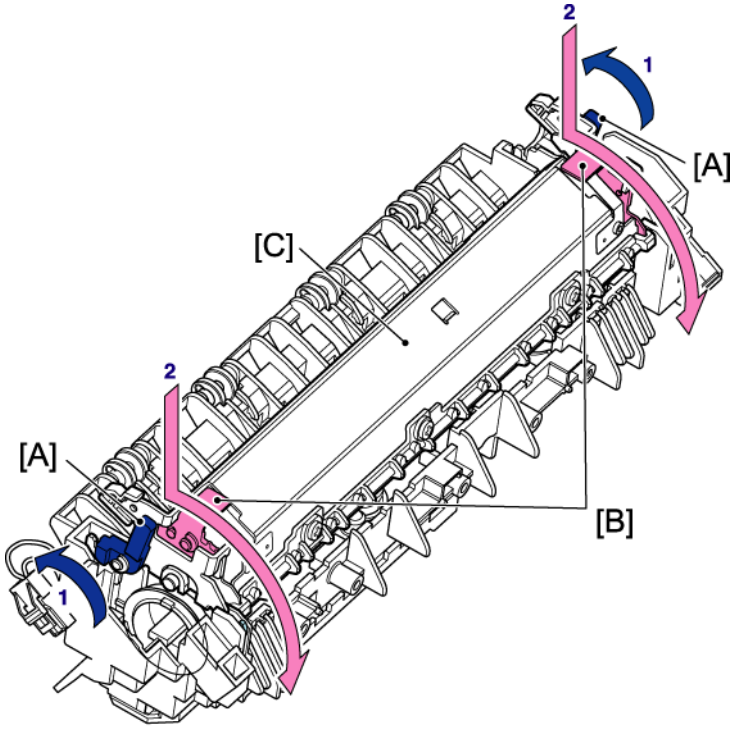
1. Foreign object around eject roller 2
   - Is there a foreign object around the eject roller 2?
     Yes: Remove the foreign object.
2. Eject roller 2 failure
   - Is the problem solved after replacing the new eject roller 2?
     Yes: Replace the top cover ASSY.

Curl in the paper

Possible cause and Remedy

1. High pressure of pressure roller in the fuser unit
   - Is the problem solved by changing the position of the pressure roller?

     Yes: Change the position of the pressure roller.



m085t004

1. Turn the Nip release lever [A] of right and left to the direction of the arrow.
2. Hold and turn the PR stopper plate [B] of right and left.
3. Print it again, and check that the curl in the paper occurs.
4. When there seems to be still the curl, replace the position of the pressure roller [C] again.

6.4 TROUBLESHOOTING OF DOCUMENT FEEDING

Problems related to document feeding are end user recoverable if following the “User Check” items. If the same problem occurs again, follow each procedure in the order of the number described in the "Possible cause and Remedy".

6.4.1 NO FEEDING

User Check

- Check if the document is inserted correctly to the depths of the ADF unit. (If the document is inserted, the LCD indication is changed.)

Possible cause and Remedy

1. Document front actuator not operating smoothly or catching
   - Does document front actuator move smoothly?
     No: Re-assemble document front actuator.
2. Foreign object around paper feed roller
   - Is there a foreign object around the paper feed roller?
     Yes: Remove the foreign object.
3. Paper feed roller failure
   - Is the surface of the paper feed roller worn out?
     Yes: Replace the separate roller shaft ASSY.
4. ADF sensor PCB
   - Is the problem solved by replacing the ADF sensor PCB?
     Yes: Replace the ADF sensor PCB.
5. ADF motor failure
   - Is the problem solved by replacing the ADF motor?
     Yes: Replace the ADF motor.
6. Drive frame ASSY failure
   - Is the problem solved by replacing the drive frame ASSY?
     Yes: Replace the drive frame ASSY.
7. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?
     Yes: Replace the main PCB ASSY

6.4.2 DOUBLE FEEDING

Possible cause and Remedy

1. Separation rubber failure
   - Is the surface of the separation rubber worn out?

     Yes: Replace the separation rubber.

6.4.3 PAPER JAM

User Check

- Check if the paper is loaded into the ADF tray correctly.
- Check if do not use the crimpy or torn paper.

Possible cause and Remedy

1. Document rear actuator not operating smoothly or catching
   - Does document rear actuator move smoothly?

     No: Re-assemble the document rear actuator.
2. Foreign object around feed roller / paper eject roller actuator
   - Is there a foreign object around the feed roller / paper eject roller actuator?

     Yes: Remove the foreign object.
3. Pinch roller of feed roller failure
   - Is pinch roller of feed roller remove?

     Yes: Re-assemble the pinch roller of the feed roller.
4. Pinch roller of paper eject roller failure
   - Is pinch roller of paper eject roller remove?

     Yes: Re-assemble the pinch roller of the paper eject roller.
5. Pressure roller film unstick
   - Does pressure roller film unstick?

     Yes: Replace the pressure roller film.
6. ADF sensor PCB
   - Is the problem solved by replacing the ADF sensor PCB?

     Yes: Replace the ADF sensor PCB.
7. ADF motor failure
   - Is the problem solved by replacing the ADF motor?

     Yes: Replace the ADF motor.

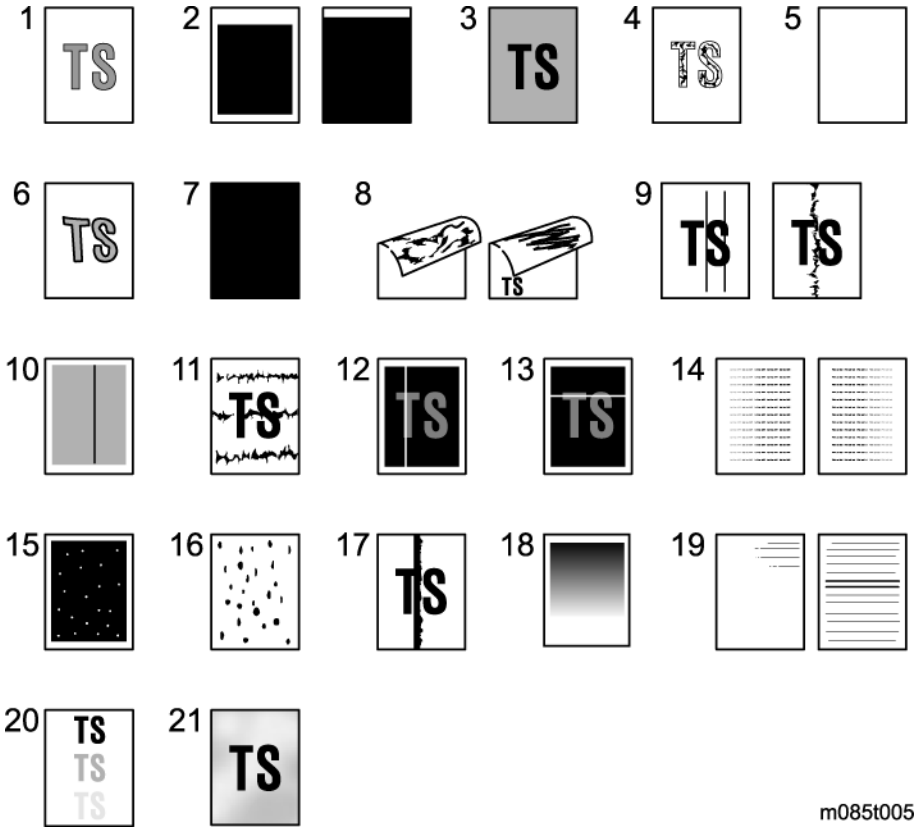
8. Drive frame ASSY failure
   - Is the problem solved by replacing the drive frame ASSY?

     Yes: Replace the drive frame ASSY.
9. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6.5 IMAGE DEFECT TROUBLESHOOTING (DEFECT OF THE PRINT)

6.5.1 IMAGE DEFECT EXAMPLES



1. Light	12. White vertical streaks
2. Faulty registration	13. White horizontal streaks
3. Dark	14. Faint print
4. Poor fixing	15. White spots
5. Completely blank	16. Black spots
6. Image distortion	17. Black band
7. All black	18. Downward fogging of solid color
8. Dirt on the back of paper	19. Horizontal lines

9. Vertical streaks	20. Ghost
10. Black vertical streaks in a light background	21. Fogging
11. Black horizontal stripes	

⚠CAUTION

- The image defect at the copy might have the cause in the scanning.
  When the failure does not reproduce by print the test pattern “MAINTENANCE 09” or PC print, refer to p.6-66 "Troubleshooting of Scanning".

6.5.2 DIAMETER OF ROLLERS

Image defects which appear periodically may be caused by failure of a roller. Specify the cause referring to the diameter of the rollers or pitch which appears in the image as shown in the table below.

No.	Parts name	Diameter	The pitch which appears in the image
1	Develop roller	Ø20.0 mm	40.6 mm
2	Exposure drum	Ø24.0 mm	75.0 mm
3	Heat roller in the fuser unit	Ø25.0 mm	78.5 mm
4	Pressure roller ASSY in the fuser unit	Ø25.0 mm	78.5 mm

6.5.3 TROUBLESHOOTING IMAGE DEFECT

Image defect related problems are end user recoverable if following the “User Check” items. If the same problem occurs, follow each procedure in the order of the number described in the "Possible cause and Remedy".

1 Light

m085t006

User Check

1. Check the machine's environment. Low temperature and low humidity conditions can cause this problem.
2. If the whole page is light, toner save mode may be on.
3. Replace the toner cartridge or drum unit with a new one.

Possible cause and Remedy

1. Dirt on exposure drum electrode
   - Are the electrodes of the drum unit and machine body dirty?
     Yes: Clean both electrodes. (☛p.6-21 "Electrodes location on the drum unit" and p.6-21 "Electrodes location on the machine")
2. Dirt on scanner windows of the laser unit
   - Is the scanner windows of the laser unit dirty?
     Yes: Wipe the dirt off with a soft, clean, lint free cloth. (Refer to figure below.)
3. Toner sensor failure
   - After replacing the toner cartridge with a new one, does the same problem occur even after printing several pages?
     Yes: Replace the toner cartridge.
4. Toner sensor failure
   - Does the machine start printing even after removing the toner cartridge from the drum unit?
     Yes: Clean the toner sensor. (receiving light side)
     Check the harness connection of the toner LED PCB ASSY. (luminescence side)
     Replace the toner sensor PCB ASSY or toner LED PCB ASSY.

5. Between the HVPS PCB/Main PCB connection failure
   - Is the harness of the HVPS PCB ASSY and main PCB ASSY connected correctly?

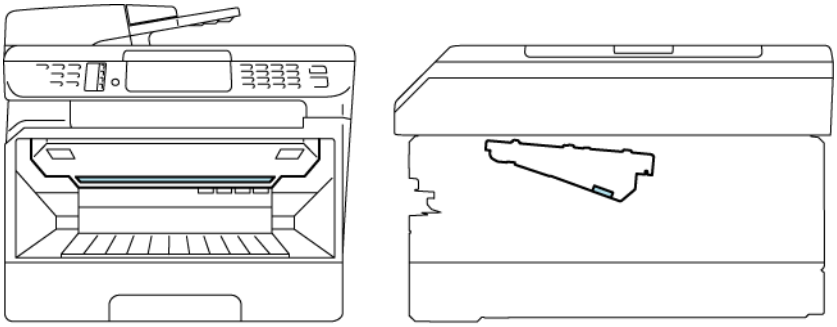
     No: Reconnect the harness of the HVPS PCB ASSY and main PCB ASSY.
6. HVPS PCB failure
   - Is the problem solved after replacing the HVPS PCB ASSY?

     Yes: Replace the HVPS PCB ASSY.
7. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.
8. Laser unit failure
   - Is the problem solved after replacing the laser unit?

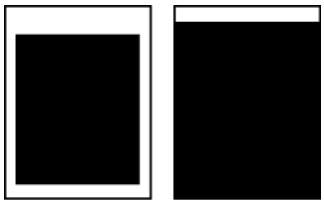
     Yes: Replace the laser unit.

     <Location of the laser beam window>



m085t007

2 Faulty registration



m085t008

User Check

Check that the appropriate media type is selected in the printer driver.

Possible cause and Remedy

1. Registration rear actuator catching in some position
   - Does the registration rear actuator move smoothly?
     No: Re-assemble the registration rear actuator and ensure smooth operation.

3 Dark

m085t009

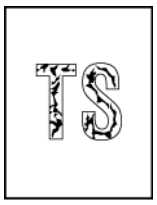
User Check

1. Check the machine's environment. High temperature and high humidity conditions can cause this problem.
2. Replace the drum unit with a new one.
3. Replace the toner cartridge with a new one.

Possible cause and Remedy

1. The developing bias voltage failure
   - Is the problem solved after resetting the developing bias counter?
     Yes: Reset the developing bias counter. (☛p.5-49 "Resetting the Developing Bias Voltage Counter")
2. HVPS PCB failure
   - Is the problem solved after replacing the HVPS PCB ASSY?
     Yes: Replace the HVPS PCB ASSY
3. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?
     Yes: Replace the main PCB ASSY.

4 Poor fixing



m085t010

User Check

1. Replace the drum unit with a new one.
2. Replace the toner cartridge with a new one.

Possible cause and Remedy

1. High pressure of pressure roller in the fuser unit
   - Is the problem solved after replacing the position of the pressure roller?

     Yes: Replace the position of the pressure roller. (☛p.6-40 "Curl in the paper")
2. Fuser unit failure
   - Is the problem solved after replacing the fuser unit?

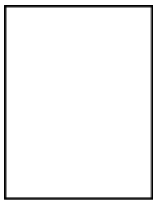
     Yes: Replace the fuser unit.
3. LVPS PCB failure
   - Is the problem solved after replacing the LVPS PCB unit?

     Yes: Replace the LVPS PCB unit.
4. HVPS PCB failure
   - Is the problem solved after replacing the HVPS PCB ASSY?

     Yes: Replace the HVPS PCB ASSY.
5. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

5 Completely blank



m085t011

User Check

1. Replace the drum unit with a new one.
2. Replace the toner cartridge with a new one.

Possible cause and Remedy

1. Developing bias voltage conduction failure
   - Are the electrodes on the drum unit and machine body dirty?

     Yes: Clean both electrodes. (p.6-21 "Electrodes location on the drum unit" and p.6-21 "Electrodes location on the machine")
2. Scanner harness of the laser unit connection failure
   - Is the scanner harness of the laser unit connected securely?

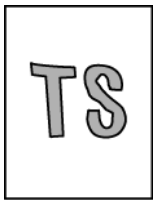
     No: Reconnect the scanner harness of the laser unit.
3. Laser unit failure
   - Is the problem solved after replacing the laser unit?

     Yes: Replace the laser unit.
4. HVPS PCB failure
   - Is the problem solved after replacing the HVPS PCB ASSY?

     Yes: Replace the HVPS PCB ASSY.
5. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6 Image distortion



m085t012

Possible cause and Remedy

1. Laser unit not assembled correctly
   - Is the laser unit assembled into the machine securely? (Check if there is no gap.)

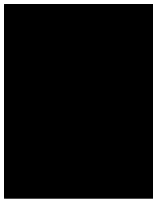
     No: Assemble the laser unit correctly and secure the screw.
2. Incorrect radiation angle of scanner diode of laser unit.

   Scanner motor rotation failure
   - Is the problem solved after replacing the laser unit?

     Yes: Replace the laser unit.
3. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

7 All black



m085t013

Possible cause and Remedy

1. Corona wire failure
   - Are the electrodes on the drum unit and machine body dirty?

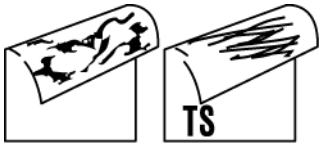
     Yes: Clean both electrodes. (☛p.6-21 "Electrodes location on the drum unit" and p.6-21 "Electrodes location on the machine")
2. Corona wire failure
   - Is the corona wire damaged?

     Yes: Replace the drum unit.
3. Under FG wire not assembled correctly
   - Is the under FG wire connected securely?

     No: Re-assemble the under FG wire.

4. Scanner harness of the laser unit connection failure
   - Is the scanner harness of the laser unit connected securely?
     No: Reconnect the scanner harness of the laser unit.
5. FG harness ASSY connection failure
   - Is the FG harness ASSY between the laser unit and main PCB ASSY connected securely?
     No: Reconnect the FG harness ASSY between the laser unit and main PCB ASSY securely.
6. HVPS PCB failure
   - Is the problem solved after replacing the HVPS PCB ASSY?
     Yes: Replace the HVPS PCB ASSY.
7. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?
     Yes: Replace the main PCB ASSY.
8. Laser unit failure
   - Is the problem solved after replacing the laser unit?
     Yes: Replace the laser unit.

8 Dirt on the back of paper

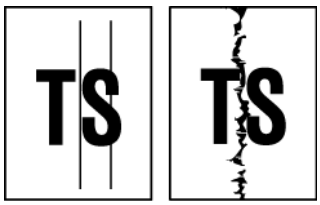


m085t014

Possible cause and Remedy

1. Scratch or Dirt on the fuser unit
   - Is the pressure roller ASSY dirty?
     Yes: Print approximate 10 pages.
   - Is any other area in the machine dirty?
     No: Replace the fuser unit.
2. Scratch or Dirt in the paper feed system
   - Is the paper feed system dirty?
     Yes: Wipe dirt off.

9 Vertical streaks



m085t015

User Check

1. This problem may occur with noise which is caused by dirt on the corona wire in the drum unit. In this case, clean the corona wire with the wire cleaner.
2. Replace the drum unit with a new one.
3. Replace the toner cartridge with a new one.

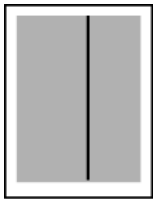
Possible cause and Remedy

1. Scratch or Dirt in the paper feed system
   - Is the paper feed system dirty?
     Yes: Wipe dirt off.
2. Scratch or Dirt on the exposure drum
   - Are there scratch and dirt on the surface of the exposure drum?
     Yes: Replace the drum unit.
3. Scratch or Dirt on the heat roller
   - Are there scratch and dirt on the surface of the heat roller?
     Yes: Replace the fuser unit.

CAUTION

- If the machine prints the same pattern, especially vertical streaks, continuous, black vertical streaks may appear on the paper as the electrostatic performance of the drum is decreased.

10 Black vertical streaks in a light background



m085t016

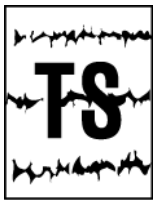
User Check

1. Clean the inside of the machine and the corona wire in the drum unit.
2. Replace the toner cartridge with a new one.

Possible cause and Remedy

1. Drum unit failure
   - Is the problem solved after replacing the drum unit?
     Yes: Replace the drum unit.

11 Black horizontal stripes



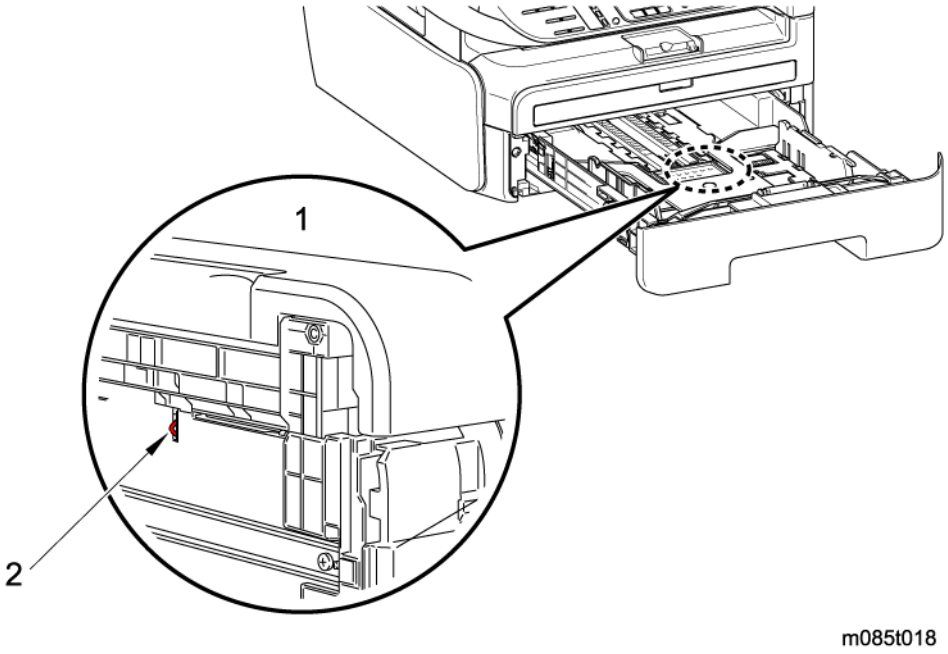
m085t017

User Check

1. Clean the inside of the machine and the corona wire in the drum unit.
2. Replace the drum unit with a new one.

Possible cause and Remedy

1. Dirt on the charge electrode
   - Are the electrodes on the drum unit and machine body dirty?
     Yes: Clean both electrodes. (p.6-21 "Electrodes location on the drum unit" and p.6-21 "Electrodes location on the machine")
2. Paper tray ground terminal located in the machine body
   - Is the paper tray ground terminal bent, which is located in the machine body? (Refer to figure below.)



1. Bottom surface of Paper tray
2. Paper tray ground terminal.

Yes: Correct the bending of paper tray ground terminal.

3. Toner attached on the develop roller
   - Are the horizontal stripes at 40.6 mm (develop roller circumference) intervals?

   Yes: This problem will disappear by printing approximate 10 pages. If the same problem occurs, replace the toner cartridge.
4. Scratch and Dirt on the exposure drum
   - Are the horizontal stripes at 75.0 mm (exposure drum circumference) intervals?

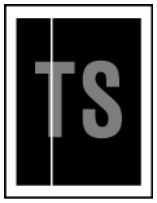
   Yes: Replace the drum unit.
5. Scratch and Dirt on the heat roller
   - Are the horizontal stripes at 78.5 mm (heat roller circumference) intervals?

   Yes: Replace the fuser unit.
6. HVPS PCB failure
   - Is the problem solved after replacing the HVPS PCB ASSY?

   Yes: Replace the HVPS PCB ASSY.
7. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?

   Yes: Replace the main PCB ASSY.

12 White vertical streaks



m085t019

User Check

1. Clean the scanner windows of the laser unit with a soft lint-free cloth. (☛p.6-46 "1 Light")
2. Replace the toner cartridge with a new one.
3. Check the machine's environment. High temperature and high humidity conditions can cause this problem.
4. Damp (wet) paper might be used. Try to change to freshly unpacked paper.
5. Check there is no dust in the gap between the toner cartridge and drum frame.

Possible cause and Remedy

1. Condensation
   - Has condensation occurred inside the machine?
     Yes: Try to print several pages or leave the machine 2 hours to allow it to reach room temperature.
2. Dirt on scanner windows
   - Is the scanner windows dirty?
     Yes: Clean the scanner windows.
3. Transfer failure
   - Is the transfer roller scratched?
     Yes: Replace the drum unit.
4. Scanner window of laser unit failure
   - Is the problem solved after replacing the laser unit?
     Yes: Replace the laser unit.

13 White horizontal streaks

m085t020

User Check

1. Check that the appropriate media type is selected in the printer driver.
2. The problem may disappear by itself. Try printing multiple pages to clear this problem especially if the machine has not been used for a long time.
3. The drum unit may be damaged. Replace the drum unit with a new one.

Possible cause and Remedy

1. Toner cartridge electrode connection failure
   - Are the electrodes on the toner cartridge and machine body dirty?
     Yes: Clean both electrodes. (☛p.6-21 "Electrodes location on the drum unit" and p.6-21 "Electrodes location on the machine")
2. Drum unit electrode connection failure
   - Are the electrodes on the drum unit and machine body dirty?
     Yes: Clean both electrodes. (☛p.6-21 "Electrodes location on the drum unit" and p.6-21 "Electrodes location on the machine")

14 Faint print

m085t021

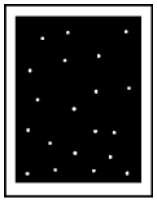
User Check

1. Check that the machine is installed on a level surface.
2. Replace the toner cartridge with a new one.
3. Clean the scanner windows of the laser unit with a soft cloth.
   (☛p.6-46 "1 Light")

Possible cause and Remedy

1. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?
     Yes: Replace the main PCB ASSY.
2. Laser unit failure
   - Is the problem solved after replacing the laser unit?
     Yes: Replace the laser unit.
3. Toner empty sensor failure
   - Is the "Toner Life End" message indicated on the LCD after replacing the current toner cartridge with the empty toner cartridge?
     No: Replace the toner sensor PCB ASSY.

15 White spots



m085t022

User Check

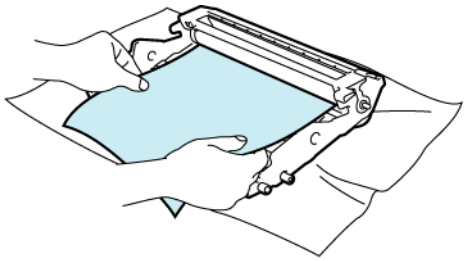
1. Toner may be empty. Replace the toner cartridge with a new one.
2. If the problem is not solved after printing a few pages, the drum unit may have glue from label stuck on the exposure drum surface. Refer to the procedures below, and wipe it off gently with a cotton swab.
3. The drum unit may be damaged. Replace the drum unit with a new one.

Possible cause and Remedy

1. Toner attached on the develop roller
   - Are the white spots at 40.6 mm (develop roller circumference) intervals?
     Yes: This problem will disappear by printing approximate 10 pages. If the same problem occurs, replace the toner cartridge.
2. Scratch and Dirt on the exposure drum
   - Are the white spots at 75.0 mm (exposure drum circumference) intervals?
     Yes: Replace the drum unit.
3. Drum unit connection failure
   - Are the electrodes on the drum unit and machine body dirty?
     Yes: Clean both electrodes. (☛p.6-21 "Electrodes location on the drum unit" and p.6-21 "Electrodes location on the machine")
4. HVPS PCB failure
   - Is the problem solved after replacing the HVPS PCB ASSY?
     Yes: Replace the HVPS PCB ASSY.
5. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?
     Yes: Replace the main PCB ASSY.

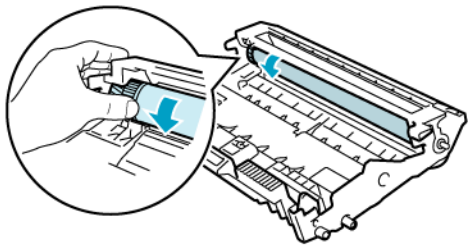
<**Clean the drum unit as follows>**

If you have print quality problems, clean the drum unit as follows:



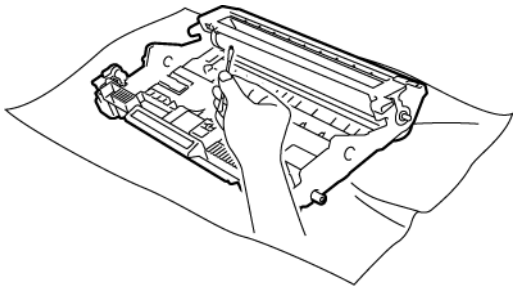
m085t023

1. Put the print sample in front of the drum unit, and find the exact position of the poor print.



m085t024

2. Turn the drum unit gear to the direction of the arrow of the figure by hand while looking at the surface of the exposure drum.



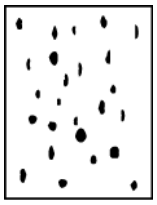
m085t025

3. When you have found the mark on the drum that matches the print sample, wipe the surface of the exposure drum with a dry cotton swab until the dust or glue on the surface comes off.

⚠CAUTION

- DO NOT clean the surface of the exposure drum with a sharp object.

16 Black spots



m085t026

User Check

1. Damp (wet) paper might be used. Try to change to freshly unpacked paper.
2. Toner may be empty. Replace the toner cartridge with a new one.
3. If the problem is not solved after printing a few pages, the drum unit may have glue from label stuck on the exposure drum surface. Wipe it off gently with a cotton swab (☛p.6-59 "15 White spots").
4. The drum unit may be damaged. Replace the drum unit with a new one.

Possible cause and Remedy

1. Toner attached on the develop roller
   - Are the black spots at 40.6 mm (develop roller circumference) intervals?
     Yes: This problem will disappear by printing approximate 10 pages. If the same problem occurs, replace the toner cartridge.
2. Scratch and Dirt on the exposure drum
   - Are the black spots at 75.0 mm (exposure drum circumference) intervals?
     Yes: Replace the drum unit.
3. Drum unit connection failure
   - Are the electrodes on the drum unit and machine body dirty?
     Yes: Clean both electrodes (☛p.6-21 "Electrodes location on the drum unit" and p.6-21 "Electrodes location on the machine").
4. Scratch and Dirt on the heat roller
   - Are the black spots at 78.5 mm (heat roller circumference) intervals?
     Yes: Replace the fuser unit.
5. HVPS PCB failure
   - Is the problem solved after replacing the HVPS PCB ASSY?
     Yes: Replace the HVPS PCB ASSY.
6. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?
     Yes: Replace the main PCB ASSY.

17 Black band

m085t027

User Check

1. Clean the inside of the machine and the corona wire in the drum unit. If the same problem occurs after cleaning, replace the drum unit with a new one.
2. The paper tray ground terminal located in the machine body may be dirty. Clean the contact with a dry cloth.

18 Downward fogging of solid color

m085t028

User Check

Toner may be empty. Replace the toner cartridge with a new one.

Possible cause and Remedy

1. HVPS PCB failure
   - Is the problem solved after replacing the HVPS PCB ASSY?
     Yes: Replace the HVPS PCB ASSY.
2. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?
     Yes: Replace the main PCB ASSY.

19 Horizontal lines

m085t029

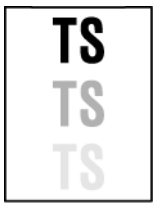
User Check

The paper tray ground terminal located in the machine body may be dirty. Clean the contact with a dry cloth.

Possible cause and Remedy

1. Dirt on charge electrode
   - Are the electrodes on the drum unit and machine body dirty?
     Yes: Clean both electrodes. (☛p.6-21 "Electrodes location on the drum unit" and p.6-21 "Electrodes location on the machine")
2. Paper tray ground terminal located in machine body
   - Is the paper tray ground terminal bent, which is located in the machine body?
     Yes: Correct the bending of paper tray ground terminal.
3. Laser unit failure
   - Is the problem solved after replacing the laser unit?
     Yes: Replace the laser unit.

20 Ghost



m085t030

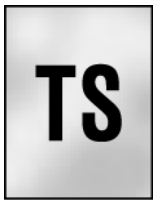
User Check

1. Check the machine's environment, conditions such as high or low humidity may cause this situation to occur.
2. Check that the appropriate media type or size is selected in the printer driver.
3. Replace the drum unit with a new one.

Possible cause and Remedy

1. Dirt on cleaner electrode
   - Are the electrodes of the drum unit and machine body dirty?
     Yes: Clean both electrodes. (p.6-21 "Electrodes location on the drum unit" and p.6-21 "Electrodes location on the machine")
2. HVPS PCB failure
   - Is the problem solved after replacing the HVPS PCB ASSY?
     Yes: Replace the HVPS PCB ASSY.

21 Fogging



m085t031

User Check

1. Replace the toner cartridge with a new one.
2. Replace the drum unit with a new one.
3. Do not use acid paper.
4. Check if there is dust or paper powder in the machine.

Possible cause and Remedy

1. Toner sensor failure (Machine body)
   - Is the toner sensor performed normally by following the procedure in p.5-19 "Operational Check of Sensors (Function code 32)"?
     No: Replace the toner sensor PCB unit ASSY and the toner LED PCB ASSY.
2. HVPS PCB failure
   - Is the problem solved after replacing the HVPS PCB ASSY?
     Yes: Replace the HVPS PCB ASSY.
3. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?
     Yes: Replace the main PCB ASSY.

⚠CAUTION

- This problem often occurs when the drum unit or toner cartridge is nearly at the end of life.

6.6 TROUBLESHOOTING OF SCANNING

6.6.1 CANNOT SCAN THE DOCUMENT IN THE FB UNIT. (IF SCAN THE DOCUMENT, IT IS COMPLETELY WHITE OR BLACK.)

User Check

Check if there is the scanning surface of the FB unit scanning document in the lower side.

Possible cause and Remedy

1. Document front actuator not operating smoothly or catching
   - Does document front actuator move smoothly?

     No: Re-assemble the document front actuator.
2. Each harnesses of FB unit connection failure
   - Is the each harnesses of FB unit connected securely?

     Yes: Reconnect the each harnesses of FB unit.
3. FB unit failure
   - Is the problem solved by replacing the FB unit?

     Yes: Replace the FB unit.
4. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6.6.2 CANNOT SCAN THE DOCUMENT IN THE ADF UNIT. (IF SCAN THE DOCUMENT, IT IS COMPLETELY WHITE OR BLACK.)

User Check

Check if there is the scanning surface of the ADF unit document in the upper side.

Possible cause and Remedy

1. Each harnesses of FB unit connection failure
   - Is the each harnesses of FB unit connected securely?

     No: Reconnect the each harnesses of FB unit.
2. FB unit failure
   - Is the problem solved by replacing the FB unit?

     Yes: Replace the FB unit.
3. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6.6.3 PRINT OF THE SCANNING DOCUMENT IS LIGHT OR DARK

User Check

Check if the ADF or FB glass is not stained.

Possible cause and Remedy

1. Setting of white level scanning area malfunction
   - Is the problem solved after setting the white level of scanning?

     Yes: Set the white level scanning area. (Function code 55)
2. FB unit failure
   - Is the problem solved by replacing the FB unit?

     Yes: Replace the FB unit.
3. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6.6.4 VERTICAL STREAKS (WHITE OR BLACK VERTICAL STREAKS)

User Check

Check if the ADF or FB glass is not stained.

Possible cause and Remedy

1. Setting of white level scanning area malfunction
   - Is the problem solved after setting the white level of scanning?

     Yes: Set the white level scanning area. (Function code 55)
2. FB unit failure
   - Is the problem solved by replacing the FB unit?

     Yes: Replace the FB unit.

6.6.5 POOR FIXING

User Check

Check if the ADF or FB glass is not stained.

Possible cause and Remedy

1. FB unit failure
   - Is the problem solved by replacing the FB unit?

     Yes: Replace the FB unit.

6.6.6 IMAGE DISTORTION

Possible cause and Remedy

1. FB unit failure
   - Is the problem solved by replacing the FB unit?

     Yes: Replace the FB unit.

6.7 SOFTWARE SETTING PROBLEMS

The machine may not print the data correctly if there are incorrect software settings.

User Check

1. Check that the USB cable and the network cable is not damaged or broken.
2. Check that the correct machine is selected if you have an interface switching device.
3. Check the descriptions on the software setting in the user's guide.
4. Try resetting the factory settings.

Possible cause and Remedy

1. Failure inside the machine
   - Does the machine print p.5-9 "Test Pattern (Function code 09)"?

     No: Identify the error type, and then refer to the specified section of this chapter.
2. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6.8 TROUBLESHOOTING OF THE COMMUNICATIONS ERROR

If a communications error occurs, the machine

1. Gives an alarm (intermittent bleep) for approximately four seconds.
2. Indicates the appropriate error message on the LCD.
3. Prints the transmission report during fax transmission.

6.8.1 DEFINITION OF ERROR CODES ON THE COMMUNICATIONS LIST

1. Calling

Code 1	Code 2	Causes
10	08	Wrong number called.
11	01	No dial tone detected before start of dialing.
11	02	Busy tone detected before dialing.
11	03	2nd dial tone not detected.
11	05	No loop current detected. *
11	06	Busy tone detected after dialing or called.
11	07	No response from the remote station in sending.
11	10	Unobtainable tone detected after dialing.
17	07	No response from the calling station in receiving.

* Available in German models only.

2. Command reception

Code 1	Code 2	Causes
20	01	Unable to detect a flag field.
20	02	Carrier was OFF for 200 ms or longer.
20	03	Abort detected ("1" in succession for 7 bits or more).
20	04	Overrun detected.
20	05	A frame for 3 seconds or more received.
20	06	CRC error in answerback.
20	07	Error command received.
20	08	Invalid command received.
20	09	Command ignored once for document setting or for dumping-out at turn-around transmission.
20	0A	T5 time-out error
20	0B	CRP received.
20	0C	EOR and NULL received.

3. Communication code compatibility [checking the NSF and DIS]

Code 1	Code 2	Causes
32	01	Remote terminal only with V.29 capability in 2400 or 4800 bps transmission.
32	02	Remote terminal not ready for polling.
32	10	Remote terminal not equipped with password function or its password switch OFF.
32	11	Remote terminal not equipped with or not ready for confidential mailbox function.
32	12	Remote terminal not equipped with or not ready for relay broadcasting function.
32	13	No confidential mail in the remote terminal.
32	14	The available memory space of the remote terminal is less than that required for reception of the confidential or relay broad-casting instruction.
32	18	Remote terminal not equipped with color function.

4. Instructions received from the remote terminal [checking the NSC, DTC, NSS, and DCS]

Code 1	Code 2	Causes
40	02	Invalid coding system requested.
40	03	Invalid recording width requested.
40	05	ECM requested although not allowed.
40	06	Polled while not ready.
40	07	No document to send when polled.
40	10	Nation code or manufacturer code not correct.
40	13	Polled by any other manufacturers' terminal while waiting for secure polling.
40	17	Invalid resolution selected.
40	20	Invalid full color mode selected.

5. Command reception [checking the NSF and DIS after transmission of NSS and DCS]

Code 1	Code 2	Causes
50	01	Vertical resolution capability changed after compensation of background color.

6. ID checking

Code 1	Code 2	Causes
63	01	Password plus "lower 4 digits of telephone number" not compatible.
63	02	Password not correct.
63	03	Polling ID not correct.

7. DCN reception

Code 1	Code 2	Causes
74		DCN received.

8. TCF transmission/reception

Code 1	Code 2	Causes
80	01	Fallback impossible.

9. Signal isolation

Code 1	Code 2	Causes
90	01	Unable to detect video signals and commands within 6 seconds after CFR is transmitted.
90	02	Received PPS containing invalid page count or block count.

10. Image signal reception

Code 1	Code 2	Causes
A0	03	Error correction sequence not terminated even at the final transmission speed for fallback.
A0	11	Receive buffer empty. (5-second time-out)
A0	12	Receive buffer full during operation except receiving into memory.
A0	13	Decoding error continued on 500 lines or more.
A0	14	Decoding error continued for 10 seconds or more.
A0	15	Time-out: 13 seconds or more for one-line transmission.
A0	16	RTC not found or carrier OFF detected for 6 seconds.
A0	17	RTC found but no command detected for 60 seconds or more.
A0	19	No video data to be sent
A8	01	RTN, PIN, or ERR received at the calling terminal. *
A9	01	RTN, PIN, or ERR received at the called terminal. *
AA	18	Receive buffer full during receiving into memory.

* Available in German models only

11. General communications-related

Code 1	Code 2	Causes
B0	02	Unable to receive the next-page data.
B0	03	Unable to receive polling even during turn-around transmission due to call reservation.
B0	04	PC interface error.
BF	01	Communication canceled by pressing the Stop/Exit button before establishment of FAX communication*.
BF	02	Communication canceled by pressing the Stop/Exit button after establishment of FAX communication*.
BF	03	Transmission canceled due to a scanning error caused by no document or document feed problem in ADF scanning in real time transmission.

* Establishment of FAX communication: FAX communication is established when the calling station receives a DIS (reception capability) signal from the called station and the called station receives a NSS or DCS (communications test) signal from the calling station.

12. Maintenance mode

Code 1	Code 2	Causes
E0	01	Failed to detect 1300 Hz signal in burn-in operation.
E0	02	Failed to detect PB signals in burn-in operation.

13. Equipment error

Code 1	Code 2	Causes
FF	X X	Equipment error (For X X, refer to ☛p.6-3 "Error Indication")

6.9 TROUBLESHOOTING OF THE CONTROL PANEL

6.9.1 NOTHING IS DISPLAYED ON THE LCD.

User Check

Verify if the power switch is turned off.

Possible cause and Remedy

1. Connection between main PCB and control panel PCB
   - Are the main PCB and control panel PCB connected properly?

     No: Reconnect the connector properly.
2. Connection between main PCB and LVPS PCB unit
   - Are the main PCB and LVPS PCB unit connected properly?

     No: Reconnect the connector properly.
3. LCD
   - Is the problem solved after replacing the LCD?

     Yes: Replace the LCD.
4. Control panel PCB
   - Is the problem solved after replacing the control panel PCB?

     Yes: Replace the control panel PCB.
5. LVPS PCB unit
   - Is the problem solved after replacing the LVPS PCB unit?

     Yes: Replace the LVPS PCB unit.
6. Main PCB
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6.9.2 THE CONTROL PANEL DOES NOT WORK.

Possible cause and Remedy

1. Key sticking
   - Is a key on the control panel stuck?

     Yes: Clean the panel cover, or remove the any burrs from the panel cover and panel keys.
2. Connection between main PCB and control panel PCB
   - Are the main PCB and control panel PCB connected properly?

     No: Reconnect the connector correctly.
3. Harness between main PCB and control panel PCB
   - Is the harness damaged?

     Yes: Replace the harness with a normal one.
4. Rubber Key
   - Is the problem solved after replacing the rubber key?

     Yes: Replace the rubber Key.
5. Control panel PCB
   - Is the problem solved after replacing the control panel PCB?

     Yes: Replace the control panel PCB.
6. Main PCB
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6.10 TROUBLESHOOTING OF FAX FUNCTIONS

6.10.1 FAX CAN'T BE SENT.

User Check

Verify that the telephone cord is securely connected.

Possible cause and Remedy

1. Dial mode Setting
   - Can a dialing signal (PB or DP) be heard normally in each mode?
     (Use telephone line emulator if required.)
     Yes: Check the dialing mode setting at customer's again. Check the telephone line cord between machine and socket.
2. Connection between main PCB and NCU PCB
   - Are the main PCB and NCU PCB connected correctly?
     No: Reconnect the connector.
3. Connection between main PCB and control panel PCB
   - Are the main PCB and control panel PCB connected correctly?
     No: Reconnect the connector.
4. Contact of rubber keys
   - Does the rubber keys work correctly?
     No: Replace the rubber Keys.
5. NCU PCB
   - Is the problem solved after replacing the NCU PCB ASSY?
     Yes: Replace the NCU PCB ASSY.
6. Control panel PCB
   - Is the problem solved after replacing the control panel PCB?
     Yes: Replace the control panel PCB.
7. Main PCB
   - Is the problem solved after replacing the main PCB ASSY?
     Yes: Replace the main PCB ASSY.

6.10.2 SPEED DIALING AND ONE-TOUCH DIALING CAN'T BE USED.

Possible cause and Remedy

1. Speed dialing keys or one-touch dialing keys
   - Can a fax transmission be made using the numeric keys?

     Yes: Replace the main PCB ASSY.
2. Dial mode Setting
   - Can a dialing signal (PB or DP) be heard normally in each mode?

     (Use telephone line emulator if required.)

     Yes: Check the dialing mode setting at customer's again. Check the telephone line cord between machine and socket.
3. Connection between main PCB and NCU PCB
   - Are the main PCB and NCU PCB connected correctly?

     No: Reconnect the connector.
4. Connection between main PCB and control panel PCB
   - Are the main PCB and control panel PCB connected correctly?

     No: Reconnect the connector.
5. Contact of rubber keys
   - Is the problem solved after replacing the rubber keys?

     No: Replace the rubber Keys.
6. NCU PCB
   - Is the problem solved after replacing the NCU PCB ASSY?

     Yes: Replace the NCU PCB ASSY.
7. Control panel PCB
   - Is the problem solved after replacing the control panel PCB?

     Yes: Replace the control panel PCB.

6.10.3 FAX CAN NOT BE RECEIVED.

User Check

Verify that the telephone cord is securely connected.

Possible cause and Remedy

1. Receive mode setting
   - Is the receive mode set to automatic receive mode?

     No: Set the receive mode to automatic receive mode.
2. NCU PCB
   - Is the problem solved after replacing the NCU PCB ASSY?

     Yes: Replace the NCU PCB ASSY.
3. Main PCB
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6.10.4 NO RINGING SOUND.

Possible cause and Remedy

1. Ring delay
   - Ring delay is set to "0".

     Yes: Change the ring delay settings to another value.
2. Ring volume
   - Ring volume is set to "OFF".

     Yes: Change the ring volume setting to another value.
3. Connection between main PCB and NCU PCB
   - Are the main PCB and NCU PCB connected correctly?

     No: Reconnect the connector.
4. Speaker
   - Is the problem solved after replacing the speaker?

     Yes: Replace the Speaker.
5. NCU PCB
   - Is the problem solved after replacing the NCU PCB ASSY?

     Yes: Replace the NCU PCB ASSY.
6. Main PCB
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6.10.5 SPEAKER IS SILENT DURING ON-HOOK DIALING.

Possible cause and Remedy

1. Connection between main PCB and speaker
   - Are the main PCB and speaker connected correctly?

     No: Reconnect the connector.
2. Speaker
   - Is the problem solved after replacing the speaker?

     Yes: Replace the Speaker.
3. Connection between main PCB and NCU PCB
   - Are the main PCB and NCU PCB connected correctly?

     No: Reconnect the connector.
4. Connection between main PCB and control panel PCB
   - Are the main PCB and control panel PCB connected correctly?

     No: Reconnect the connector.
5. NCU PCB
   - Is the problem solved after replacing the NCU PCB ASSY?

     Yes: Replace the NCU PCB ASSY.
6. Main PCB
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6.10.6 DIALING FUNCTION DOES NOT SWITCH BETWEEN "TONE" AND "PULSE".

Possible cause and Remedy

1. Connection between main PCB and NCU PCB
   - Are the main PCB and NCU PCB connected correctly?

     No: Reconnect the connector.
2. NCU PCB
   - Is the problem solved after replacing the NCU PCB ASSY?

     Yes: Replace the NCU PCB ASSY.
3. Main PCB
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6.11 OTHERS PROBLEMS

6.11.1 THE MACHINE IS NOT TURNED ON, OR THE LCD INDICATION DOES NOT APPEAR.

Possible cause and Remedy

1. Harness connection failure of panel PCB
   - Is the harness of the panel PCB ASSY connected correctly?

     No: Reconnect the panel PCB ASSY harness.
2. Panel PCB failure
   - Is the problem solved after replacing the panel PCB ASSY?

     Yes: Replace the panel PCB ASSY.
3. LCD failure
   - Is the problem solved after replacing the LCD?

     Yes: Replace the LCD.
4. LVPS PCB failure
   - Is the problem solved after replacing the LVPS PCB unit?

     Yes: Replace the LVPS PCB unit.
5. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6.11.2 THE FAN DOES NOT WORK.

Possible cause and Remedy

1. Harness connection failure of the fan motor 60 ASSY.
   - Is the harness of the fan motor 60 ASSY connected correctly?

     No: Reconnect the harness of the fan motor 60 ASSY correctly.
2. Toner LED PCB ASSY failure
   - Is the problem solved after replacing the toner LED PCB ASSY?

     Yes: Replace the toner LED PCB ASSY.
3. Main PCB failure
   - Is the problem solved after replacing the main PCB ASSY?

     Yes: Replace the main PCB ASSY.

6.11.3 PICKUP FUNCTION OF PAPER TRAY DOES NOT WORK.

Possible cause and Remedy

1. Link arm not operating smoothly or catching.
   Make sure correct movemet of the link arm.
2. Pickup roller holder ASSY not operating smoothly or catching.
   Make sure correct movement of the pickup roller holder ASSY.
3. Roller holder ASSY failure
   Replace the roller holder ASSY.
4. Main motor failure
   Replace the main motor.
5. Main PCB failure
   Replace the main PCB ASSY.

6.11.4 A NEW TONER CANNOT BE DETECTED.

Possible cause and Remedy

1. New toner actuator does not operate smoothly or is catching.
   Make sure correct movement of the new toner actuator.
2. New toner actuator damaged
   Replace the new toner actuator.
3. Main PCB failure
   Replace the main PCB ASSY.
4. New toner sensor harness ASSY failure
   Replace the new toner sensor harness ASSY.

ENERGY SAVING

REVISION HISTORY		
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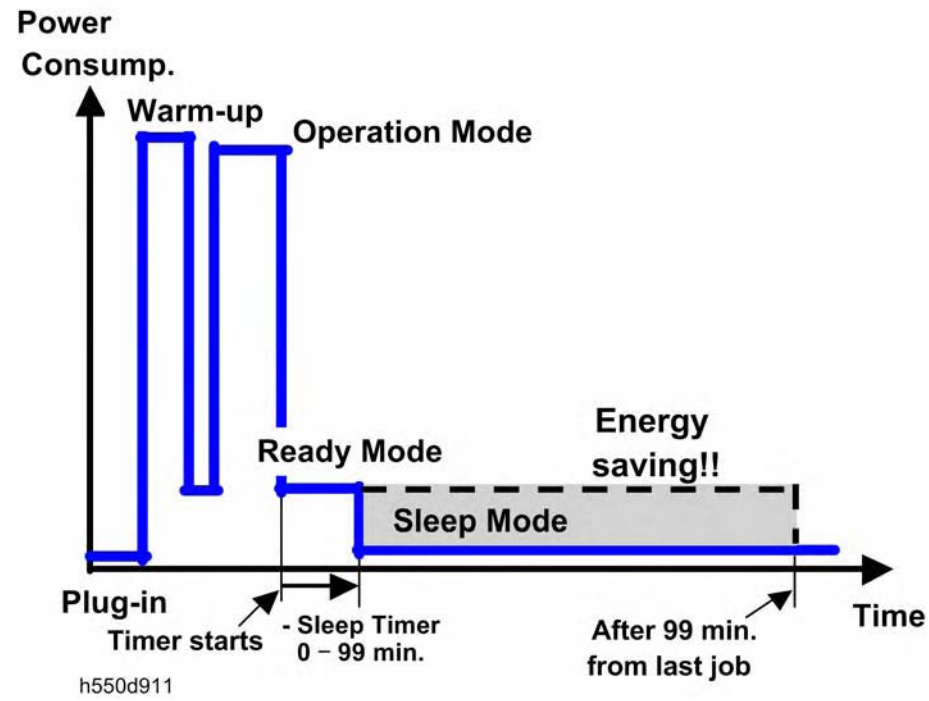
		None

7. ENERGY SAVING

7.1 ENERGY SAVE

7.1.1 SLEEP MODES

Customers should use the sleep mode properly, to save energy and protect the environment.



The area shaded in this diagram represents the amount of energy that is saved when the timer is at the default settings. If the timers are changed, then the energy saved will be different. For example, if the timers are all set to 99 min., the grey area will disappear, and no energy is saved before 99 min. expires.

Timer Settings

The user can set this timer with User Tools (Menu > Mode Timer > 2. Sleep Mode)

- Sleep timer (0 – 99 min): Default setting: 5 minutes

Return to Stand-by Mode

Sleep Mode

Recovery time.

- Max 18 sec.

Recommendation

We recommend that the default setting should be kept.

- If the customer requests that this setting should be changed, please explain that their energy costs could increase, and that they should consider the effects on the environment of extra energy use.
- If it is necessary to change the setting, please try to make sure that the Sleep timer is not too long. Try with a shorter setting first, such as 30 min., then go to a longer one (such as 60 min.) if the customer is not satisfied.
- If the timer is set to the maximum value, the machine will not begin saving energy until 99 minutes has expired after the last job. This means that after the customer has finished using the machine for the day, energy will be consumed that could otherwise be saved.

7.2 PAPER SAVE

7.2.1 EFFECTIVENESS OF COMBINE FUNCTION

Combine function reduces the amount of paper used. This means that less energy overall is used for paper production, which improves the environment.

1. Combine mode:

Reduce paper volume in half!

d062d100

To check the paper consumption, look at the total counter.

tal counters

This machine has total printed counters only. You can check the total counters on the “Function code 80”.

- Total counters: Maintenance Mode > “Function code 80”.

The following table shows paper savings and how the counters increase for some simple examples if combine mode is used.

2 in 1 mode

Originals	Paper Saved	Total counter
1	**0**	1
2	**1**	1
3	**1**	2
4	**2**	2
5	**2**	3
10	**5**	5
20	**10**	10

M085/M086/M104
SERVICE MANUAL APPENDICES

M085/M086/M104 APPENDICES

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Appendix:

Specifications

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1. APPENDIX: SPECIFICATIONS

1.1 SPECIFICATIONS LIST

1.1.1 PRINTING

Model	M085	M086/M104
Print method	Electrophotography by semiconductor laser beam scanning	
Laser	Method: 1 polygon motor, 1 laser beam Wavelength: 780nm-800nm Output: 10mW (Maximum)	
Resolution	HQ1200/600dpi/300dpi	
Print mode	Normal printing mode Economy printing mode (Toner saving mode)	
Print Speed *1	Up to 22 ppm (A4 size) *2, Up to 23 ppm (Letter size) *2	
Warm-up time	Less than 18seconds at 23°C (73.4°F)	
First print out time	Less than 10seconds at 23°C (73.4°F)	

*1 The printing speed may change depending on the type of document you print.

*2 From standard paper tray.

Consumables

Model	M085	M086/M104
Toner cartridge	Life expectancy: Starter: 1,000pages/ cartridge Standard: 2,600pages/ cartridge When printing A4/ Letter-size paper in accordance with ISO/IEC 19752. Shelf life: 2years (5months after opening)	
Drum unit	Life expectancy: 12,000pages/ drum unit (1page/job) Shelf life: 2years (5months after opening)	

The shelf life mentioned above is guaranteed under the normal condition as below;

(Temperature)

Normal condition: 0 to 40 °C

- Storage condition at the temperature of 40 to 50 °C: Up to 5days
- Storage condition at the temperature of -20 to 0 °C: Up to 5days

(Humidity)

Normal condition: 35 to 85%

- Storage condition at the humidity of 85 to 95%: Up to 5days
- Storage condition at the humidity of 10 to 35%: Up to 5days

Note

- Print speed varies depending on the paper size or media type. For details, refer to p.1-10 "Print Speeds with Various Settings".

1.1.2 FUNCTIONS

<Controller>

Model		M085	M086/M104
CPU		192MHz	
Memory		32 MB	16 MB
Interface		Full-Speed USB 2.0, External TAD	Full-Speed USB 2.0
Emulation		PCL6, PS3 (Br-Script 3)	GDI
Resident fonts	PCL	66 scalable fonts, Letter Gothic 16.66 Bit map fonts, OCR-A, OCR-B, 13 bar codes	N/A
	PS	66 PS compatible fonts	N/A

<Software>

Model		M085	M086/M104
Printer driver	Windows®	Host-Based for Windows® 2000 Professional, XP Home Edition, XP Professional, XP Professional x64 Edition, Vista®, Windows® 7 BR-Script 3 (PPD file for Windows® 2000 Professional, XP Home Edition, XP Professional, XP Professional x64 Edition, Vista®, Window® 7)	Host-Based for Windows® 2000 Professional, XP Home Edition, XP Professional, XP Professional x64 Edition, Vista®, Windows Server® 2003 (print only via network)

<System requirements>

Computer Platform & Operating System Version		Processor Minimum Speed	Minimum RAM	Recommended RAM	Available Hard Disk Space
Windows®	2000 Professional	Intel® Pentium® II or equivalent	64MB	256MB	50MB
	XP Home Edition		128MB		
	XP Professional				
	XP Professional x64 Edition	64-bit (Intel® 64 or AMD64) supported CPU	256MB	512MB	
	Vista®	Intel® Pentium® 4 or equivalent 64-bit (Intel® 64 or AMD64) supported CPU	512MB	1GB	
	7		1GB (32-bit) 2GB (64-bit)	1GB (32-bit) 2GB (64-bit)	
	Server® 2003	Intel® Pentium® III or equivalent	256MB	512MB	
	Server® 2003 x64 Edition	64-bit (Intel® 64 or AMD64) supported CPU			

<Electronics and Mechanics>

Model		M085	M086/M104
Power consumption	Copying	Average 320W at 25°C (77°F)	
	Standby	Average 75W at 25°C (77°F)	
	Sleep	Average 11W at 25°C (77°F)	Average 9W at 25°C (77°F)
Noise level	Sound Pressure	Printing: 53dB(A) Standby: 32dB(A)	Printing: 50dB(A) Standby: 30dB(A)
	Sound power	Printing: LWAd = 6.2Bell(A) Standby: LWAd = 4.4Bell(A)	Printing: LWAd = 6.4Bell(A) Standby: LWAd = 4.4Bell(A)
Temperature		Operating: 10 to 32.5°C (50 to 90.5°F) Non operating: 0 to 40°C (38 to 104°F) Storage: -20 to 40°C (-4 to 104°F)	
Humidity		Operating: 20 to 80% (non condensing) Storage: 10 to 85% (non condensing)	
Dimensions (W × D × H)	with carton	550 × 510 × 520mm (21.7 × 20.1 × 20.5inch)	
	without carton	428 × 397 × 305mm (16.9 × 15.6 × 12.0 inch)	428 × 396 × 304mm (16.9 × 15.6 × 12.0inch)
Weights	with carton	14.9kg (32.8lb)	
	without carton and toner/drum	10.0kg (22.0lb)	

1.1.3 PAPER

Paper handling

Item	Specification
Paper Input: Manual feed slot	1sheet *1
Paper Input: Paper tray	250sheets *1
Paper Input: ADF	35sheets *1
Paper Output: Face-down	100sheets *1
Paper Output: Face-up	1sheets *1
Duplex: Manual Duplex	Yes

*1 Calculated with 80g/m^2 (20lb) paper

Media Specifications

Model	M085	M086/M104
Media types: Manual feed slot	Plain Paper, Bond Paper, Recycled Paper, Envelopes, Labels, Transparencies	Plain paper, Bond paper, Recycled paper, Thin paper, Thick paper, Envelopes, Labels, Transparencies
Media types: Paper tray	Plain Paper, Recycled Paper, Transparencies	Plain paper, Recycled paper, Thin paper, Transparencies *1
Media types: ADF *2	Plain, Recycled paper	
Media weights: Manual feed slot	60 to 163g/m^2 (16 to 43lb)	
Media weights: Paper tray	60 to 105g/m^2 (16 to 28lb)	
Media weights: ADF	64 to 90g/m^2 (17 to 24lb)	
Media sizes: Manual feed slot	Width: 76.2 to 220mm (3.0 to 8.66 in.) Length: 116 to 406.4 mm (4.57 to 16 in.)	
Media sizes: Paper tray (Standard)	A4, Letter, Legal *3, B5 (ISO), Executive, A5, A6, B6, Folio	
Media sizes: ADF	Width: 148.0 to 215.9mm (5.8 to 8.5lb) Length: 148.0 to 355.6mm (5.8 to 14.0lb)	

*1 Up to 10 sheets

*2 Except M104

*3 Legal size paper is not available in some regions outside the U.S.A. and Canada.

Type and Size of Paper

The printer loads paper from the installed paper tray or the manual feed slot. The names for the paper trays in the printer driver are as follows:

- Paper tray: Tray 1
- Manual feed slot: Manual
- Auto Document Feeder: ADF

<Media type>

	Tray 1	Manual	ADF	Choose the media type from the printer driver
Plain paper 75 to 105g/m^2 (20 to 28lb)	Yes		Yes (64 to 90g/m^2) (17 to 24lb)	**Plain paper**
Recycled paper	Yes			**Recycled paper**
Bond paper Rough paper- 60 to 163g/m^2 (16 to 43lb)	N/A	Yes	N/A	**Bond paper**
Thin paper 60 to 75g/m^2 (16 to 20lb)	Yes		N/A	**Thin paper**
Thick paper 105 to 163g/m^2 (28 to 43lb)	N/A	Yes	N/A	**Thick Paper** or **Thicker Paper**
Transparency	Yes A4 or Letter		N/A	**Transparencies**
Labels	N/A	Yes A4 or Letter	N/A	**Thicker Paper**

	Tray 1	Manual	ADF	Choose the media type from the printer driver
Envelopes	N/A	Yes	N/A	**Envelopes** **Env. Thin** **Env. Thick**

Note

- Use paper that is made for plain-paper copying.
- Use papers that is 75 to 90g/m^2 (20 to 24lb).
- Use neutral paper. Do not use acidic or alkaline paper.
- Use long-grain paper.
- Use paper with a moisture content of approximately 5%.
- This printer can use recycled paper that meets DIN 19309 specifications.
- DO NOT use ink jet paper because it may cause a paper jam or damage your machine.

1.1.4 PRINT SPEEDS WITH VARIOUS SETTINGS

Print speed is up to 22ppm for A4 size and 23ppm for Letter size when loading A4 or Letter size paper from the paper tray in the plain paper mode.
Actual print speed varies depending on the media type or paper size as shown in the tables below;

<A4/Letter size>

Media type setting	All models
Thin Paper	22/23ppm
Plain Paper	
Recycled Paper	
Thick Paper, Envelopes, Envelopes Thin	10ppm
Thicker Paper, Envelopes Thick	4ppm

<Smaller size than A4 or Letter>

Media type setting	All models
Thin Paper	22/23ppm
Plain Paper	300 seconds 22/23ppm → 8ppm
Recycled Paper	300 seconds 22/23ppm → 8ppm
Thick Paper, Envelopes, Envelopes Thin	30 seconds 22/23ppm → 8ppm
Thicker Paper, Envelopes Thick	4ppm

Note

- The print speed may vary according to conditions, such as paper size and paper tray.
- When a smaller size paper than A4 or Letter is printed, the temperature on both edges of the fuser unit is much higher than the temperature on the center of the unit where the paper is fed depending on the setting or model. Therefore, the print speed is slowed in order to decrease the temperature on the edges after the specified time, it is maximum print speed when you first start printing.
- The actual print speed varies depending on the paper size.

1.1.5 TELEPHONE

Model		M085	M086/M104
Handset		N/A	
Chain Dialing		Yes	N/A
Automatic Redial		Yes	N/A
PBX Feature		N/A	
Speaker Phone		N/A	
Hold/Mute Key		N/A	
Music on Hold		N/A	
Volume	Handset Volume	N/A	
	Speaker Volume	Yes (3 steps + OFF)	N/A
	Beeper Volume	Yes (3 steps + OFF)	
	Ring Volume	Yes (3 steps + OFF)	N/A
Quick/ Auto Dials	One-Touch Dial	8 (4 x 2) locations	N/A
	Speed Dial	200 locations	N/A
	Figures of One-Touch & Speed Dial	20 digits	N/A
	Registrable Number Of Characters	15 characters	N/A
	Group Dial	Yes (up to 8 groups)	N/A
	Telephone Index (Search)	Yes (with ▼key)	N/A

Model		M085	M086/M104
TEL Service	Caller ID	N/A	
	Call Waiting Caller ID	N/A	
	Call waiting Ready (Only for U.S.A.)	N/A	
	Distinctive Ringing	Yes (US/Canada/UK/Denmark/Singapore/Hong Kong only)	N/A

1.1.6 FAX

Model		M085	M086/M104
Modem Speed		33.600bps (Fax)	N/A
Transmission Speed	Mono	Approx. 2seconds (ITU-T #1, JBIG)	N/A
ITU-T Group		Super G3	N/A
Coding Method		MH / MR / MMR / JBIG	N/A
Color FAX (Document)	Send	N/A	
	Receive	N/A	
Color FAX (Memory)	Send	N/A	
	Receive	N/A	
Fax/Tel Switch		Yes	N/A
Super Fine		Yes (TX & RX)	N/A
Gray Scale		8bit/256	N/A
Contrast		Yes (Auto/Light/Dark)	N/A
Smoothing		N/A	
Dual Access		Yes	N/A
Enhanced Remote Activate		Yes	N/A
Station ID		Yes (20digits / 20characters)	N/A
Remote Maintenance		Yes	N/A
Remote Access		Yes	N/A
Fax Retrieval		Yes	N/A

Model		M085	M086/M104
Paging		N/A	
Internet FAX (ITU T.37 simple mode)		N/A	
Sending	Delayed Timer	Yes (up to 50)	N/A
	Polled Sending	Yes (Europe Secure Polling)	N/A
	Multi Transmission	N/A	
	Multi Resolution Transmission	N/A	
	Next-Fax Reservation	N/A	
	Batch Transmission	Yes	N/A
	Call Reservation Over Auto TX	N/A	
	Call Reservation Over Manual TX	N/A	
	Quick-Scan (Memory transmission)	Approx. 2.5 seconds/page (A4/Letter Standard Resolution)	N/A
	Memory Transmission	Up to 500 pages (ITU-T Test Chart, Standard Resolution, JBIG)	N/A
	ECM (Error Correction Mode)	Yes	N/A
	Error Re-Transmission	Yes	N/A
	Broadcasting	Yes (258 locations)	N/A

Model		M085	M086/M104
	Manual Broadcasting	Yes (50 locations)	N/A
Sending	Fax Forward	Yes	N/A
	Fax Forward Broadcast	Yes (207 locations)	N/A
	Duplex Fax Send	N/A	
	Dial Restriction	Yes	N/A
Receiving	Easy Receive/Fax Detect	Yes	N/A
	Polling Receiving	Yes	N/A
	Auto Reduction	Yes	N/A
	Duplex Fax Receive	N/A	
	Out-of-Paper Reception	Up to 500 pages (ITU-T Test Chart, Standard Resolution, JBIG)	N/A
	Fax Rx Stamp	Yes	N/A
List/Report	Activity Report/Journal Report	Yes (up to 200)	N/A
	Transmission Verification Report	Yes	N/A
	Coverpage	Yes (Super)	N/A
	Help List	Yes	N/A
	Call Back Message	N/A	
	Caller ID List	N/A	
	Quick Dial List	N/A	

Model			M085	M086/M104
	Quick Dial List (empty box is not printed out)		Yes	N/A
	Tel Index List	Numeric	Yes	N/A
		Alphabetic	Yes	N/A
	Memory Status List		N/A	
	System Setup (User Setting) List		Yes	
	Order Form		N/A	

1.1.7 COPY

Model		M085/M086/M104
Copy Speed		Up to 22 cpm/up to 23 cpm
First Copy Out Time (from READY mode)		less than 15 seconds
Multi Copy	Stack	Yes (up to 99)
	Sort	Yes
Reduction/Enlargement (%)		25% - 400% in 1% increments
Resolution (dpi)		Print: 600 x 600 dpi, 1200 dpi class
Auto Duplex Copy		N/A
Manual Duplex Copy		N/A
N in 1		Yes
Poster		N/A
Image Enhancement		N/A

1.1.8 SCANNER

Model		M085	M086/M104
Color/Mono		Color	
Resolution (Optical)	From Glass	Maximum 600 x 2400 dpi (color & mono)	
	From ADF	Maximum 600 x 600 dpi (color & mono)	
Resolution (Interpolated)		19,200 x 19,200 dpi	
Scanning Speed	Monochrome	4.95 seconds (Letter)/5.26 seconds (A4) *1	
	Full Color	7.48 seconds (Letter)/7.95 seconds(A4) *1	
Gray Scale		256	
Color Depth (Int. /Ext.)		48 bit/24 bit	24 bit/24 bit
Custom Scan Profile		N/A	
Duplex Scan		N/A	
Scan Functions	Scan to E-mail	Yes	
	Scan to Email Server (I-Fax)	N/A	
	Scan to Image	Yes	
	Scan to OCR	Yes	
	Scan to File	Yes	
	Scan to FTP	N/A	

*1 Time to scan Letter/A4 sheet at 300 dpi. The time may vary depending on the document type and other conditions. Data transmission time is not included.